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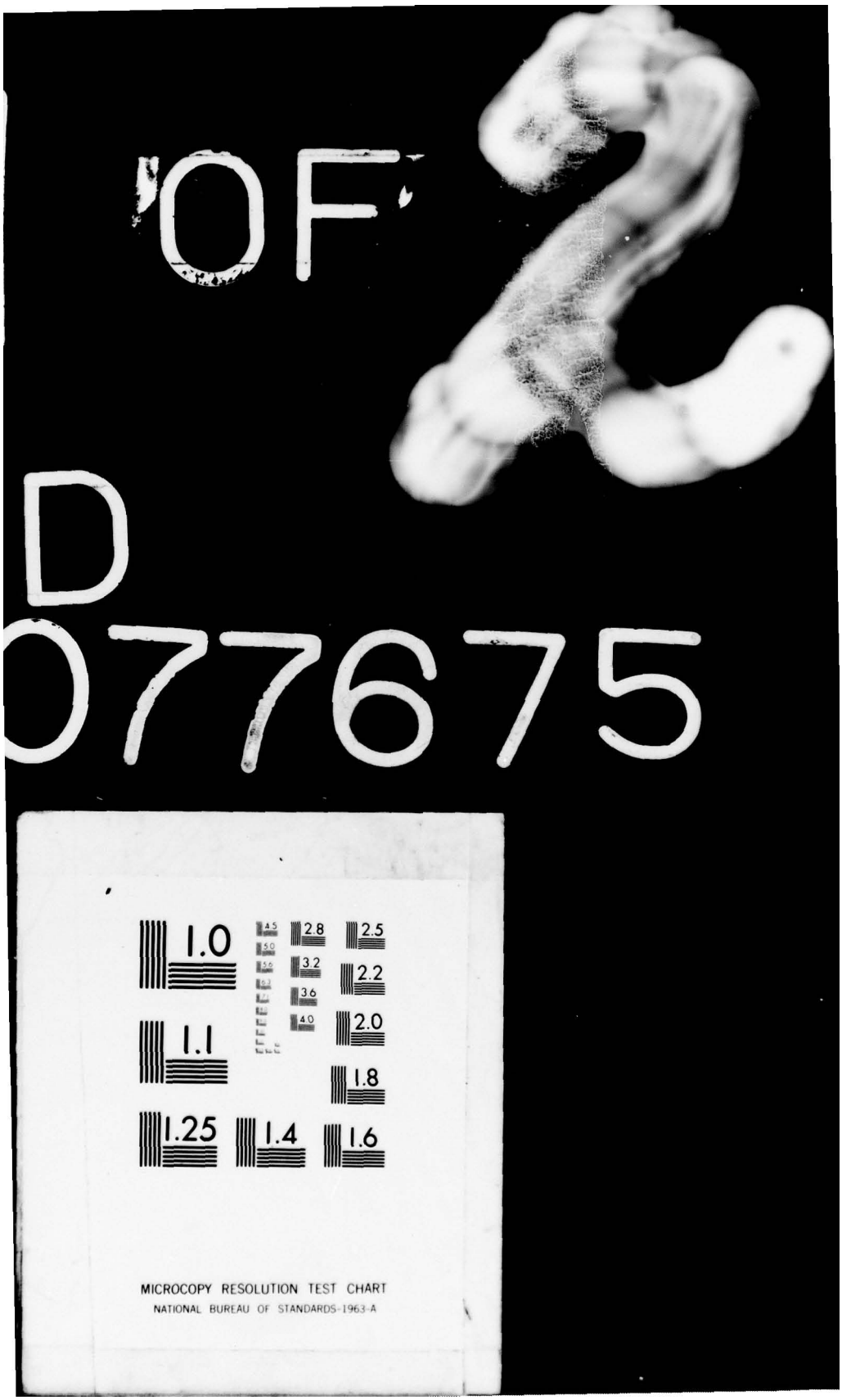
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SPACE TRANSPORTATION SYSTEM WESTERN LAUNCH SITE CONSTRUCTION MANAGEMENT INFORMATION SYSTEM - A CASE STUDY

G. Scott Griffin, Captain, USAF
James M. Mardis, Captain, USAF

LSSR 4-79B

UNITED STATES AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY
Wright-Patterson Air Force Base, Ohio

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The Corps of Engineers Management Information System (COEMIS) is used by the Corps of Engineers in their role as Construction Agents on Air Force projects built under the Military Construction Program. This research investigates the ability of COEMIS to meet Air Force informational needs by examining the construction management effort in progress on the Western Launch Site Space Transportation System facilities at Vandenberg Air Force Base, California. The research concluded that the Corps of Engineers Management Information System can be an effective, efficient management tool which has the capability to meet Air Force needs provided; 1) implementation of real time computer interfaces, 2) Air Force participation in COEMIS, and 3) establishment of a split data base. The results of this study should be applicable to all major Air Force construction projects managed by the Army Corps of Engineers.

LSSR 4-79B

SPACE TRANSPORTATION SYSTEM WESTERN LAUNCH SITE CONSTRUCTION MANAGEMENT INFORMATION SYSTEM - A CASE STUDY

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Facilities Management

By

G. Scott Griffin, BSICM
Captain, USAF

James M. Mardis, BSCE
Captain, USAF

September 1979

This thesis, written by

Captain G. Scott Griffin

and

Captain James M. Mardis

has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

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DATE: 7 September 1979

Robert B. Weaver
COMMITTEE CHAIRMAN

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- Our advisor, Dr. Robert B. Weaver, for his valuable advice and direction.

- Mr. Curtis Leblanc, LA District Corps of Engineers, and Lt. Col. Earl Jones, SAMSO/DEC, for their help and technical advice.

- Finally, our typist, Bev Griffin for her patience and perseverance in converting our illegible pencil scratchings into a completed thesis.

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LIST OF ABBREVIATIONS

ADP - Automated Data Processing

A-E - Architect-Engineer

AFR - Air Force Regulation

AFRCE - Air Force Regional Civil Engineer

AFSC/DE - Air Force Systems Command/ Directorate of Engineering

AMPRS - Automated Military Progress Reporting System

AR - Army Regulation

CIS - Construction Implementation Study

CMS - Construction Management System

COE - Corps of Engineers

COEMIS - COE Management Information System

CPM - Critical Path Method

CPR - Construction Progress Report

CST - Construction Surveillance Team

CWE - Current Working Estimate

DOD - Department of Defense

FWG - Facilities Working Group

GFM - Government Furnished Material

GFE - Government Furnished Equipment

GSS - Ground Support Systems

GSSI - Ground Support Systems Inspection

ICMS - Integrated Construction Management System

KSC - Kennedy Space Center

LA - Los Angeles

LCC - Launch Control Center

MIDAS - Military Information and Decision Analysis System

MIS - Management Information System

MOU - Memorandum of Understanding

NASA - National Aeronautics and Space Administration

NAVFAC - Naval Facilities Engineering Command

OCE - Office of Chief of Engineering

OICC - Officer in Charge of Construction

OMCF - Orbiter Maintenance and Checkout Facility

RA/PM - Resources Allocation and Project Management System

ROICC - Resident Officer in Charge of Construction

SAC - Strategic Air Command

SAMSO - Space and Missile Systems Organization

SAMSO/DE - SAMSO/ Directorate of Engineering

SAMSO/DEC - SAMSO/ Directorate of Engineering, Construction Branch

SAMSO/LVR - SAMSO/ Reusable Launch Vehicles System Program

SAMTEC - Space and Missile Test Center

SLC - Space Launch Complex

STS - Space Transportation System

USAF - United States Air Force

VAFB - Vandenberg Air Force Base

WLS - Western Launch Site

Chapter 1

BACKGROUND

PROBLEM STATEMENT

The Army Corps of Engineers Management Information System (COEMIS) will provide the project management information required by the Air Force in its role of construction surveillance on the Western Launch Site (WLS) Space Transportation System (STS) Ground Support System (GSS) facilities construction. The agency responsible for this surveillance, Space and Missile Systems Organization, Directorate of Engineering (SAMSO/DE), has expressed some doubts that COEMIS, as currently proposed, can provide all management information necessary for SAMSO/DE to successfully fulfill its role of surveillance on this complex construction program. An in-depth study evaluating COEMIS against the needs of the Air Force could aid both the Army and the Air Force in their effort to complete this key construction program. Further, the results of this study could have universal application to Air Force construction programs administered by the Army Corps of Engineers (COE).

HISTORY

The first operational launch of the space shuttle is programmed for late 1979 from Kennedy Space Center (KSC). By late 1983, the Western Launch Site (WLS) at Vandenberg Air Force Base, California, is scheduled for its first launch and recovery mission (7:17). The U.S. Air Force's Space and Missile Systems Organization (SAMSO) was tasked to develop project plans for the construction of the launch and recovery facilities at Vandenberg and support facilities at Port Hueneme (10:32). In any dynamic, ongoing program such as this, dollar amounts, dates, and even project scopes are constantly being changed or reestimated. All of the information in the chapter is current through July 1979.

Construction of the facilities at Vandenberg began in early 1979, with the operational portion slated for completion in time for a late 1983 launch date (12:35). All facilities were designed to retain the greatest possible degree of commonality with the systems at KSC. Current working estimates for the major new facilities and modifications which are to be accomplished at Vandenberg total over $333 million, with funding for the projects coming from the Military Construction Programs of 1979 through 1983 (13:30). The House Appropriations Committee

recently deleted a large part of the FY 1980 construction funds for Vandenberg which, unless further Congressional actions are taken, may cause a year's delay in construction completion [17:39].

The major facilities and complexes in the current program are summarized as follows:

a) Modification of airfield. The runway will be extended to 15,000 ft. to accommodate orbiter landings.

b) Mate/demate facility. This facility allows orbiters to be off-loaded from Boeing 747s which serve as ferry ships.

c) Safing and deservicing facility. This is a hangar to be constructed near the end of the runway. The orbiter will be towed here after landing to allow cooling, defueling, and crew egress.

d) Orbiter maintenance and checkout facility [OMCF]. This facility is for payload removal and scheduled or unscheduled orbiter maintenance to ready the orbiter for flight.

e) Hypergolic service facility. Orbiter fuel cells are deserviced and safed in this facility.

f) Tow route. Existing base roads will be modified for towing the orbiter from the OMCF to the launch pad. The distance from OMCF to the launch site is approximately 15 miles.

g) Solid rocket booster refurbishment and subassembly

facility. This involves the extensive modification of an existing structure presently being used by the Titan program.

h] External tank processing and storage facility. The large external fuel tanks used by the orbiter will be stored and checked out at this facility after arriving via barge from the manufacturer in Louisiana.

i] Launch control center (LCC). The existing Launch Control Center for Space Launch Complex Six will be extensively modified.

j] Space Launch Complex Six (SLC-6). This launch complex, originally built for the Manned Orbiting Laboratory program, will be modified with new flame ducts, fuel storage areas, a payload processing facility, a mobile payload changeout facility, a launch mount with sound suppression water system, an altered existing mobile service tower with tracks extended, and a gas storage area.

k] Other facilities. Other facilities to be constructed include a facility at Port Hueneme Naval Construction Battalion Center, 100 miles south of Vandenberg, to retrieve and disassemble the recoverable Solid Rocket Boosters, an existing building to be modified as a parachute refurbishment facility, flight crew facilities, logistics facilities, and several support facilities.

This brief outline of the STS GSS facilities

program provides a picture of the work to be accomplished at Vandenberg and Port Hueneme. The Air Force and the Army will have complementary roles in assuring completion of this major construction project.

ROLES

SAMSO/DE developed a Facility Acquistion Plan for the project, including a plan for the construction management at Vandenberg and Port Hueneme. The using agency, in this case the Air Force, will rely upon the Army Corps of Engineers (COE) as the construction agent at Vandenberg and the Naval Facility Engineering Command (NAVFAC) as the construction agent at Port Hueneme to provide the direct link to the construction contractors (7:26). An illustration of this organization at Vandenberg is shown in Figure 1.

The initial research emphasis was placed on the interface between the using agency (Air Force) and the construction agency (COE). This interface is outlined in several publications initiated by SAMSO. The two most current and applicable studies on the construction management organization are the Integrated Construction Management System, prepared by SAMSO, and the Construction Implementation Study (CIS), done by Martin Marietta Corporation under contract from SAMSO.

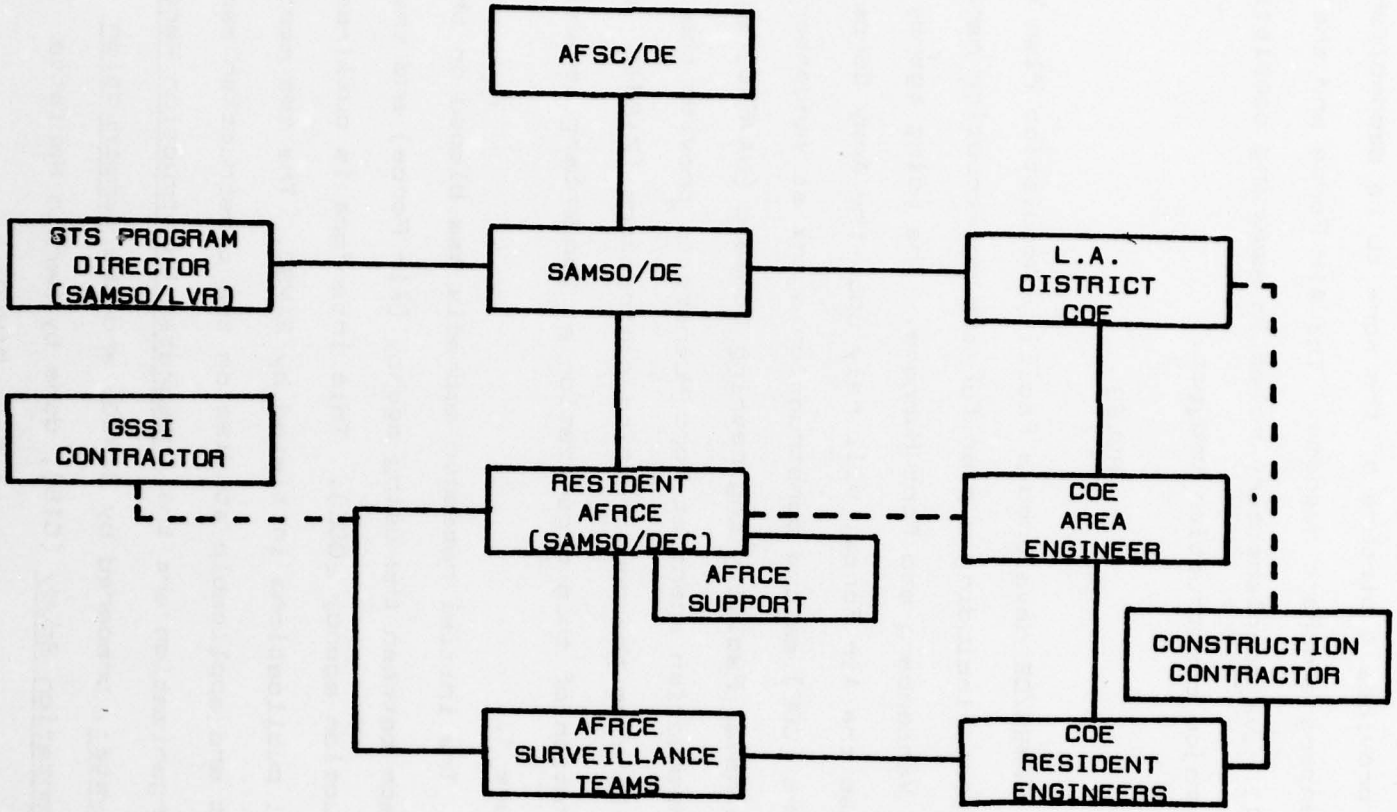

FIGURE 1

ORGANIZATIONAL RELATIONSHIPS (1:Atch 3)

Integrated Construction Management System

The Integrated Construction Management System (ICMS) is designed to meld all of the agencies participating in the construction effort into an integrated management team. The team is based on four primary elements:

a) Facilities Working Group (FWG),

b) Integrated Construction Management Information System,

c) Colocation of construction management facilities and consolidation of common functions, and

d) Memorandums of Understanding (MOU) (8:1).

Facilities working group. The Facilities Working Group serves as the primary integration instrument in the system. It is chaired by the resident Air Force Regional Civil Engineer (AFRCE), in this case SAMSO/DECS, and the membership includes all organizations involved in the program at Vandenberg as listed in Figure 2. It serves four key functions in the construction management process. First, it provides an arena where progress, problems, and activity reports can be presented. Second, the FWG greatly facilitates the review and validation of the numerous changes which are expected. Third, a USAF construction surveillance team was formed from the FWG membership. Last, the FWG should serve to promote the smooth transition from the construction phase to the activation of the facilities

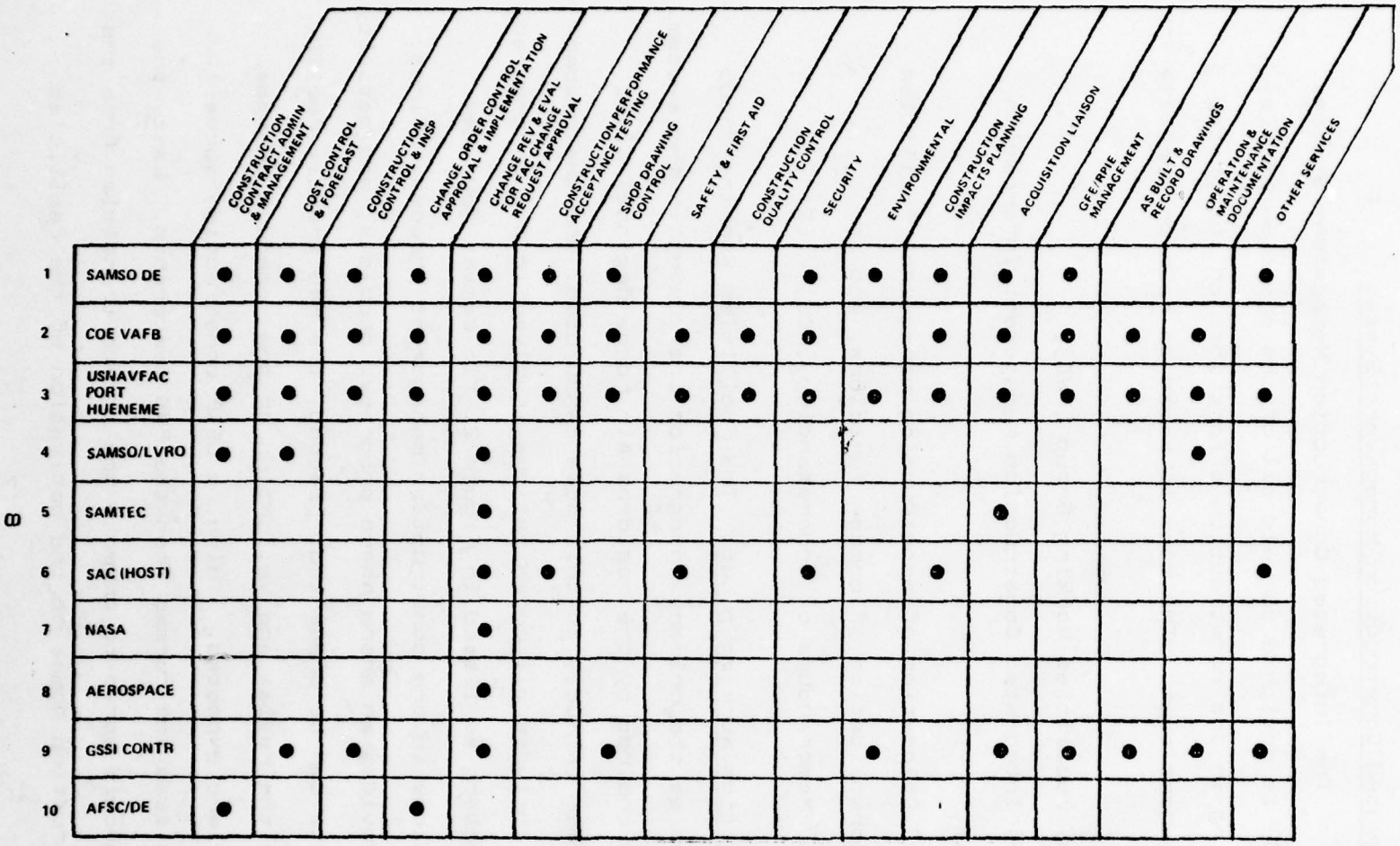

FIGURE 2

CONSTRUCTION INVOLVEMENT MATRIX [8:Atch 1]

involved [8:2].

Integrated Construction Management Information System. The Integrated Construction Management Information System is made up of two subsystems of COEMIS, the Automated Military Progress Reporting System [AMPRS] and the Resource Allocation and Project Management System [RA/PM] [8:2]. These systems will be discussed more fully in a later section.

Colocation. The colocation concept provides a central area office with resident offices at each operating location. This organization is depicted in Figure 3 [8:3].

Memorandums of Understanding. The last primary element of the ICMS are the two Memorandums of Understanding [MOU] between the Air Force, the COE, and Navy Facilities Engineering Command [NAVFAC]. Because of the small scope of the work involving NAVFAC, only the MOU involving the COE was fully investigated. This document outlines Air Force and COE responsibilities and incorporates the FWG as an integral element. The responsibilities of the Air Force as outlined in the MOU include:

a) Surveillance,

b) Funds management,

c) Reporting, and

d) Submittals [8:3].

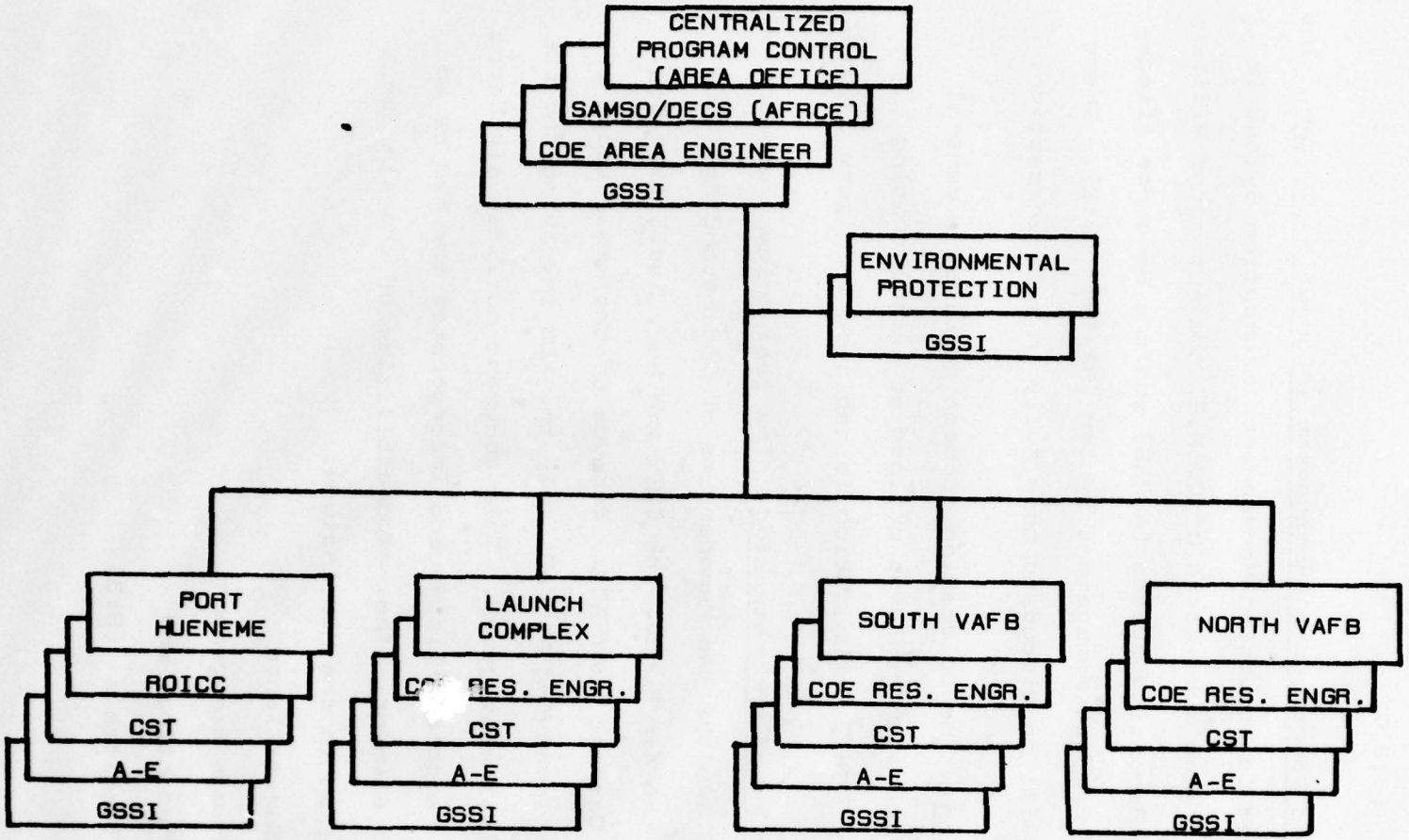

FIGURE 3

INTEGRATED CONSTRUCTION MANAGEMENT ACTIVITIES (1:Atch 4)

In general terms surveillance was defined as:

(a) On-site observation of construction.

(b) Receiving the results of selected laboratory tests and analysis of materials in instances where inferior construction or materials are discovered or suspected.

(c) Continuing inquiry into the status and current schedule of the project, including actual or proposed modifications or change orders.

(d) Analysis of the contractor's construction schedule as submitted to the construction agency to ensure that interfaces with Base activities are properly timed.

(e) Coordination with the construction agency to ensure acceptable adjustment of completion dates when required.

(f) Reporting to higher Air Force headquarters of major obstructions to progress, such as strikes or delays beyond the control of the construction offices.

(g) Evaluating all deficiencies detected or reported and ensuring the appropriate AF action is taken.

(h) Timely reporting of the information concerning progress and status of construction.

(i) Funds management [8:Atch 6,p.2].

The MOU places the responsibility for funds management with the AFRCE. Primarily the AFRCE is responsible for the minimization of cost growth during construction. The AFRCE provides the COE with current working estimates of costs and will assure that funds are available equal to the provided estimate (8:Atch 6,p.3).

The preparation of the Construction Management Report (AF Form 1959) is also the responsibility of the AFRCE. Information needed in this report is obtained from two sources: the Construction Status Report (a product of the FWG) and by AFRCE surveillance (8:Atch 6,p.3).

Submittals which require coordination by Air Force agencies will be determined during the 90% design review of each facility. Typical items submitted will be schedules, shop drawings, samples, and manufacturer's literature for functional equipment or materials [8:Atch 6, pp.3-4].

Construction Implementation Study

Further investigation of the interface was accomplished by reviewing the relationships as described in the Martin Marietta Construction Implementation Study [CIS]:

> The AFRCE is responsible, on a day-to-day basis, for monitoring construction progress and forecasting to assure that facilities are operable and available to meet program milestone dates. Day-to-day construction inspection for schedule adherence and compliance to design requirements, as reflected in contract documents, is the responsibility of the construction agencies. Support of AFRCE in evaluation of construction progress and forecasting responsibilities is provided by on-site surveillance of critical construction events and trends analysis [15:3-3].

While day-to-day construction inspection remains with the construction agent, this section implies daily on-site observation is expected of the surveillance team. Under the quality control provision, the AFRCE has a secondary responsibility to review construction quality control for adequacy and completeness [15:3-11]. This section continues to clarify the AFRCE/construction agent interface.

Summary

In summary, it was found that while SAMSO had

already accomplished extensive research into the interface, a number of important areas needed further study. For example, the Air Force was not fully aware of the Army's management information system and its capabilities. Also, there was some question as to how the large number of change orders expected would be handled. The research team concluded that direct communication with those involved with the project would accomplish two objectives. First, it would help the research team identify the major problem areas, and second, it would allow SAMSO/DE to direct the research team toward research which would be of value to the STS GSS program.

PROBLEM DEVELOPMENT

In an effort to delimit and formalize the research topic, the research team made a site visit to the SAMSO/DE offices at Los Angeles Air Force Station, and Vandenberg AFB, California during December, 1978. An initial briefing presented by Lt. Col. Earl Jones and Major Ray Rodgers summarized the facilities status and developed the construction management concepts presented in the previous sections [14:1-33].

During the course of the initial briefing, and in subsequent interviews with both Air Force and Army representatives, several potential problem areas which had not been fully investigated by the CIS or the ICMS were

identified:

a) Continuing evolution of system requirements with a rigid construction completion schedule. Major changes in facilities are possible, even after contract award, due to parallel evolution of system requirements. One example was a change in runway length made late in the design phase based on results of the first flight of the orbiter Enterprise.

b) Continuing evolution of support equipment and the resulting interface problems. Even though design is complete or nearing completion on most facilities, some support equipment is still in the development process, and may require facilities changes simply to allow the equipment to fit.

c) Tracking of change orders. With a fixed construction completion date, tracking of user change orders will become critical in assuring on-time completion [11:2]. While the first two problems are beyond the control of the construction management organization, the third problem -- information concerning the status of proposed change orders -- as well as other reporting requirements, will be handled by the Corps of Engineer's Management Information System [COEMIS] [11:3].

Two subsystems of COEMIS will provide the bulk of the management information for both Air Force and Army efforts. The Automated Military Progress Reporting

System (AMPRS) will provide construction progress reporting, change order status, funds status, and network analysis. The Resource Allocation Project Management System (RA/PM) will provide a master network, overall program monitoring, and identification of interfaces between projects (14:18). There was some apprehension on the part of SAMSO/DECS that COEMIS will not provide all data necessary to allow the Air Force to fully carry out its construction surveillance function (11:3).

During an open discussion between the research team and SAMSO/DECS personnel, it was agreed that a look into the ability of COEMIS (particularly the AMPRS subsystem) to provide critical management information to the Air Force would be appropriate (11:3). An executive summary of the AMPRS was made available for background information. This manual gives an extensive overview of the purpose, scope, and applicability of the system, as well as sample output of the various programs available (4:1-1,1-2). The next step was to identify the Air Force requirements. The ICMS contains a Memorandum of Understanding with the COE outlining basic requirements (8:Atch 6, pp.2,3). These requirements, however, are general in nature and not inclusive of all Air Force needs. The most complete listing of anticipated needs is located in a preliminary draft of the STS Construction Management Plan (9:14,18,19). While this draft plan is obsolete, it provided an excellent

starting point for determing a comprehensive list of Air Force needs.

In order to solicit support from the COE, a visit was made to the Los Angeles District COE office. As the result of an interview with Mr. Dick Young, Mr. Bill Mahoney, and Mr. Curtis Leblanc [one of the authors of AMPRS], the COE agreed to lend support where possible. Indications were, however, that the Army believed the Air Force wanted more information than necessary to provide the surveillance function.

The impression left on the research team after completing interviews with COE and Air Force representatives was that a communications problem existed between the two agencies. As an example, the Air Force believed that they had adequately transmitted Air Force needs regarding a management information system to the COE, and were awaiting the first output from the COE system. The COE on the other hand, was waiting for some direction from the Air Force as to Air Force needs before starting work on the management information system.

Prior to departure, the research team provided a final out-briefing to SAMSO/DECS. The evaluation of COEMIS in relation to the Air Force construction surveillance effort on the STS GSS was finalized as the research topic.

Chapter 2

RESEARCH OBJECTIVES, QUESTIONS, AND ANALYSIS METHODOLOGY

RESEARCH OBJECTIVES

The objective of this research was to verify that COEMIS will meet the needs of the Air Force construction surveillance effort on the STS GSS, or alternately, to recommend changes such that the needs of the Air Force are fully met.

Sub-objectives

Accomplishment of the research objective required efforts to:

a] Develop a list of perceived Air Force needs.

b] Validate the needs of the Air Force against requirements stated in AFRs 89-1, 88-3, 88-18, and other sources.

c] Fully evaluate the capabilities of COEMIS.

d] Compare COEMIS against the attributes of an "ideal" management information system.

e] Compare COEMIS output against validated needs.

f] Recommend changes/modifications to the COEMIS and/or

g] Recommend changes/modifications to the Air Force needs.

RESEARCH QUESTIONS

Accomplishment of the above objectives answered the following research questions:

a) Does each stated need fill a surveillance requirement as directed by competent authority?

b) Does COEMIS meet the basic requirements of a management information system?

c) Does an output format exist in COEMIS which will satisfy the validated need without undue transposition? If not:

d) Does the information necessary to satisfy the validated need exist in the COEMIS data base, and can it be output? If not:

e) Can the information necessary to satisfy the validated need be added to the data base and output at a reasonable cost? If not:

f) Can the validated need be modified to take advantage of existing or easily added data base?

ANALYSIS METHODOLOGY

The research objectives and questions outlined in the previous section imply an inherent analysis methodology. The remainder of this section will outline the approach taken to organize and direct the balance of the research effort, and to describe the information sources available.

Step 1 was to develop a list of stated Air Force

needs. This list was derived initially from the Memorandum of Understanding with the COE [8:Atch 6, pp.2,3], and the Draft Construction Management Plan [9:14,18,19].

Step 2 validated each need against requirements as stated in applicable regulations and directives.

Step 3 was to fully investigate the capabilities of COEMIS, in particular AMPRS. In addition to the Executive Summary for the AMPRS mentioned in Chapter 1, four additional source documents were studied: Users Manual for the AMPRS, a guide for acquiring information from and coding information into AMPRS [6]; ADP Manual for AMPRS, a guide for manipulating the various AMPRS programs [2]; Reference Manual for the AMPRS, a summary of terms, coding, report analysis, and data elements [5]; and Conversion Instructions for the AMPRS, instructions for coding, loading and manipulating the system [3].

Step 4 was to compare COEMIS against the attributes of an "ideal" management information system.

Step 5 was to verify that COEMIS output can meet the requirements of each validated need. Each need was associated with a specific COEMIS report or data element where possible.

This procedure allowed a complete and comprehensive evaluation of COEMIS, particularly the AMPRS subsystem. Once step 5 was completed, a thorough evaluation of COEMIS, along with conclusions and recommendations was possible.

Chapter 3

RESEARCH STEPS

STATED NEEDS

The development of a comprehensive list of Air Force needs concentrated on two primary source documents: the Memorandum of Understanding with the COE [8:Atch 6, pp.2,3], and the Draft Construction Management Plan [9:14,18,19]. In developing this list, no attempt was made to prejudge the validity of any input, allowing the research team to move to the next step in the analysis (validation of each need) with a complete and unbiased listing of perceived Air Force needs.

Memorandum of Understanding

The MOU is a document outlining the duties and responsibilities of both the COE and the Air Force with respect to the design and construction of the STS GSS facilities. The specific needs agreed upon in the MOU include:

a) The Air Force will have unlimited access to contractor supplied schedules.

b) The Air Force will receive copies of the Master Network (CPM) as necessary.

c) The Air Force will receive, as a minimum, monthly

copies of the following reports:

- Network analysis,
- Construction progress status report,
- Contract modification status report, and
- Contingency fund status report (8:Atch 6,pp.2,3).

The significance of the MOU is that it provides for a level of service already agreed upon by the COE and the Air Force. As such, it provides a starting point from which recommendations can be made.

Draft Construction Management Plan

The Draft Construction Management Plan contains the Air Force's first attempt at a MOU with the COE. It lists fully the Air Force needs, including general objectives and specific needs, which are summarized below.

General objectives. a) To provide an accurate, up-to-date data base of important project information to assist management in decision making.

b) To highlight problems and potential problems in critical project areas.

c) To provide current and projected cost status on each project and the overall program.

d) To provide a recognized historical record of each project to be used as a rational basis for extending performance periods, settling claims, etc.

e) To provide accurate, timely reporting of program

status to appropriate organizations [9:14].

Specific requirements. a] A computerized, cost loaded CPM schedule showing order and interdependence of all significant activities planned by the contractor, identifying as a minimum:

- Preceeding and following event numbers,
- Description of activity,
- Cost of activity,
- Activity duration,
- Party responsible for activity,
- Area of project, and
- Activities planned for expediting.

Activities on the CPM should include:

- Construction operations,
- Shop drawing submittals,
- Critical material and equipment procurment,
- Installation and testing of critical items, and
- GFM/GFE activities [9:18,19].

b] Management reports required by the Draft Plan include:

- Activities to be started, in progress, or completed during the following month,
- Activities started, in progress, or completed during the previous month, including remarks indicating problem areas, impact of delaying factors, and corrective actions,

- Monthly updated schedule and status reports, including accumulated costs,

- Key activity status report,

- Hot list of activities on critical path to start within 45 days, as well as activities with 30 days or less float,

- Relative float schedule indicating if a contractor is ahead of, on, or behind schedule,

- Master listing of CPM data,

- Bar chart indicating construction activity to occur during the next 60 days,

- Cash flow analysis,

- Cost schedule report,

- Cost earned report,

- Contract progress report (executive summary),

- Change order status report,

- Shop drawing status report, and

- GFM/GFE status report [9:20-26].

As shown above, the list taken from the Draft Construction Management Plan is the most complete of those presented. Together with the specific needs agreed upon in the MOU, this last list provides the starting point for answering the remaining research questions.

VALIDATED NEEDS

Two source documents provide the primary justifi-

cation behind the stated needs outlined in the previous section. Army Regulation 415-11 directs the COE to "Provide necessary reports regarding inspection tests and management supervision records to the Air Force when requested [19:4]." Air Force Regulation 89-1 states that

> In general terms major command surveillance includes, but is not limited to: . . . Qualitative and quantitative examination of the work. . . . Continuing inquiry into the status and current schedule of all projects, including actual or proposed modifications or change orders. . . . Analysis of the contractor's construction schedule as approved by the construction agency . . . . Detection, recognition, and resolution of obstructions to satisfactory progress of construction. . . . Evaluating all deficiencies detected or reported, and insuring that corrective action is taken. . . . Timely reporting of information concerning progress and status of construction [18:12-2].

In a line-by-line review of the stated needs outlined in the previous section, the research team found no individual item that could be considered unreasonable or beyond the scope allowed by AR 415-11 or AFR 89-1; however, several items appear redundant, and taken as a whole, the listing of stated needs might be considered excessive. For example, the hot list of activities would include all activities with 30 days or less float, while the relative float schedule would contain much the same information.

After a look at the capabilities of COEMIS, a comparison can be made between Air Force needs and COEMIS output.

COEMIS

Two existing subsystems of COEMIS are expected to provide the management information required by the Air Force on the STS GSS construction program: RA/PM, which provides a master CPM network, and AMPRS, which provides the monitoring and analysis functions. Since the CPM provided by RA/PM is general in nature, almost all key management information will flow through AMPRS. This section investigates both subsystems.

RA/PM

The COE will use the RA/PM subsystem of COEMIS to produce the master CPM network. As discussed earlier, RA/PM is a general network utilizing time parameters but not cost. RA/PM has the capability to identify:

- Preceding and following event numbers,
- Description of activity,
- Activity duration,
- Party responsible for activity, and
- Area of project.

RA/PM can not identify:

- Cost of activity,
- Activities planned for expediting,
- Shop drawing submittals,
- Critical material and equipment procurement, and
- GFM/GFE activities.

While much of this information does exist in the AMPRS data base, currently there is no program which ties the RA/PM data base into AMPRS.

AMPRS

AMPRS is based on a data matrix recently expanded to over 400 data elements. It has the capability of producing 16 pre-programmed management reports, as well as the flexibility to produce custom reports as necessary. Since the STS GSS construction program has passed most key design points, few questions remain in this area. As a result, this section, as well as the remainder of the research effort will concentrate on the construction oriented reports and analysis provided by AMPRS.

Data element-report matrix. The data element-report matrix, included as Appendix A, shows which data elements are included in each standard report. In addition, the matrix indicates which data elements are classified as Air Force construction progress report data, and which are classified for use with the Army's Management Information and Decision Analysis System (MIDAS). The source of the data element is given by the alpha characters in the extreme left-hand column of the matrix.

AMPRS reports. The applicable pre-programmed management reports available in AMPRS are explained below:

a) Office of Chief of Engineers (OCE) Construction

Progress Data. This report is produced to provide input data for several forms required by OCE, and to update the OCE master file. One report is produced for each project. An example of this report is shown on page 62 in Appendix B (6:3-13).

b) Division Construction Report. This report provides information at the division level on projects in the construction phase. An example of this report is shown on page 63 in Appendix B (6:3-19).

c) District Construction Report. This report is intended for both Army and Air Force use. It provides detailed information about both Army and Air Force projects to those who are directly responsible for project construction. An example of this report is shown on page 64 in Appendix B (6:3-25).

d) Contracts Modifications and Pending Items Report. This report lists all projects within a District which are in the construction phase, and summarizes what changes have been made and which items have required modification. It is designed to serve as a companion report to the District Construction Report. An example of this report is located on page 65 in Appendix B (6:3-27).

e) District Exception Report. This report actually contains six reports, three dealing with the design phase, and three dealing with the construction phase. It identifies items which have significant overruns or underruns

with respect to funds, performance periods, or dates. Only projects which have overruns or underruns are listed. The three reports dealing with the construction phase are: Construction Funds, Construction Contract Award Date, and Construction Time. Examples of this report are shown beginning on page 66 in Appendix B [6:3-29].

f] Construction Progress Report [CPR] Project Current Working Estimate [CWE] Report. Information for this report includes all expenditures and cost records applicable to AMPRS. Examples of this report are shown beginning on page 69 in Appendix B [6:3-33].

g] Using Service Construction Status Report. This report provides the using service [the Air Force] with a monthly status on all Air Force projects. Information includes percent complete, scheduled beneficial occupancy date, completion date, current working estimate, and contract amount for each project. An example of this report is shown on page 72 in Appendix B [6:3-41].

h] Construction Management Report. The purpose of this report is to provide the COE's Construction Branch with information on funds, modifications, pending items, and progress status. Also included is a Station/District summary. An example of this report is shown on page 73 in Appendix B [6:3-34].

i] Work Placement Estimate. This report provides a monthly placement estimate by station. Scheduling can be

provided for up to a three year period. A summary is included by Area Resident Office and District. Examples of this output are shown beginning on page 74 in Appendix B [6:3-45].

j) AMPRS Construction Progress Data. This report contains the same information as the OCE Construction Progress Data Report, but is presented in a more readable format. An example of this report is shown on page 79 in Appendix B [6:3-37].

A complete and detailed data dictionary and analysis of standard reports can be found in the Reference Manual for the Automated Military Progress Reporting System [AMPRS] [6]. With the information outlined in this section, validated needs can be compared against existing output. If existing output is not sufficient, a scan of the data base can verify whether the information exists to produce a custom report.

Prior to evaluating COEMIS against the needs of the Air Force, it was felt that a comparison of COEMIS with an "ideal" management information system would be appropriate. The next section is intended to more clearly define the capabilities and limitations of COEMIS.

COEMIS VS. "IDEAL" MIS

Before critiquing COEMIS as a management information system, it is essential to establish some baseline

for comparison. A management information system can be as simple as a data base which stores and summarizes information accumulated over a long period of time, or as complex as the real time, interactive system used to monitor a space shot [16:192]. Management Systems : Conceptual Considerations by Schoderbek, Kefalas, and Schoderbek [16] provides an excellent summary of the basic considerations, development, and management involved in a management information system.

Five primary factors determine the effectiveness of any given management information system:

- Timeliness and accuracy,
- Responsiveness,
- Exception reporting,
- Capability for additional integration, and
- User acceptance [16:197,198].

The remainder of this section relates each of these five factors to AMPRS.

Timeliness and accuracy. The primary objectives of any management information system are timeliness and accuracy. The information must be available to the user when he needs it and while it is still correct. Obviously the accuracy of the information is largely dependent on the timeliness of the information since systems are usually dynamic in nature [16:197]. AMPRS, particularily in this case, appears to be unable to provide managers with needed

information quickly enough. In the case of construction at Vandenberg the problem is particularly acute for several reasons. First, because Vandenberg (and its COE offices) is located several hundred miles from the COE office in Los Angeles, paperwork transactions are slowed by mail delays. Second, the construction at Vandenberg is expected to be quite dynamic in nature, involving an unusually large number of changes during construction. A "typical" transaction might flow as follows:

Activity	Time Required
Inspector notes change and saves it until he has enough to fill a coding form	3-7 days
Inspector mails coding form to LA office	3 days
Key punch operator punches batch input cards	2 days
Cards sent to Sacramento (Site of computer operations for COE)	3 days
Processing on computer	5 minutes
Output sent to LA office	3 days
Reports forwarded to users	5 days
	24-28 days

Considering that many reports are published monthly, it can be seen that data up to 60 days old can possibly be in use, clearly an unacceptable situation.

The most obvious solution to this problem is the addition of a real time capability at the COE office at

Vandenberg. This capability would allow inspectors to personally interface with the data base, and along with improving the timeliness of the information provided in the reports, could increase the accuracy of the data by reducing key punch errors. By placing interfacing real time terminals at other user locations, current information would be made available to them as well.

Responsiveness. Responsiveness refers to the MIS's capability to answer specific user inquiries on a one-time basis [16:197]. At this time, AMPRS does not have this capability per se. AMPRS does have the capability to produce custom reports if a lead time of approximately 30 days is allowed for the required programming actions [4:2-3]. This delay could be reduced to the time required to walk to the terminal if users were given a real-time interface as suggested earlier. The AMPRS data elements are organized in such a manner that no major modification to the program would be required. Only the creation of various dummy integrated data store codes would be needed to extract any piece of data from the files.

Exception reporting. The manager is interested in those items which are exceptions to the norm, particularly those which are or soon will be out of control [16:197]. AMPRS has the capability to produce exception reports, and, as outlined earlier in this chapter, has a standard exception

report titled District Exception Report. In this report all project items having significant overruns or underruns with respect to time, funds, or performance periods are listed. The report is generated for both design and construction phases of the project [4:4-3].

Capable of additional integration. Present systems should be compatible with future hardware and software changes that may occur [16:197]. The AMPRS data base has been separated into two subfiles to assure the system's ability to expand in the future. Only one of the two subfiles is presently used by AMPRS, the other being reserved for future enhancements to the system [2:1-3].

User acceptance. The MIS will fail if it is not accepted by its users for any reason [16:198]. AMPRS has been in use by the COE for several years and has largely been accepted in that branch of the service. However, the Air Force has limited experience with the system, and has, on more than one occasion, expressed grave doubts over the ability of the system to meet the needs of the Air Force. One of the purposes of this research is to investigate the system and remove these doubts if they are unwarranted.

In summary, AMPRS has the potential to meet each of the requisites set forth as "ideal." Its limitations are, at this time, in hardware and in user capability. The lack of real time capability is a serious detriment to

the effectiveness of the system as a whole. Evidence has been found to indicate that at levels in the COE below district, the system is looked upon as an exercise in paperwork. If these problems can be solved, AMPRS could approach an "ideal" level.

COEMIS VS VALIDATED NEEDS

The list of needs presented in the Draft Construction Management Plan (9) is based on the assumption that a cost-loaded CPM is used, and that the data base used for that CPM is interactive with the data base used to produce management reports. As discussed earlier in this Chapter, COEMIS does not meet either of these assumptions. Attempting to compare needs as stated in the Draft Construction Plan directly with COEMIS output would be like comparing apples and oranges. For example, AMPRS is simply not geared to identify activities on the critical path or to produce a relative float schedule. By examining the CPM output of RA/PM, the manager can identify contract portions that lie on the critical path and then inquire as to whether or not that contract is on schedule through the AMPRS reports. In other words, the information requested by the Air Force may be available, but not in the format specified. In order to compare Air Force needs directly with COEMIS output, it will be necessary to "filter" the validated needs into a format suitable for

comparison with COEMIS.

CPM

The Draft Construction Management Plan indicates the need for a fully integrated CPM. The Air Force was looking for an all-inclusive cost-loaded CPM which integrates the individual CPMs submitted by each contractor into a single detailed master CPM for the project. Theorectically, a CPM of this nature would allow the manager to determine the effects of a delay by any one contractor on the total program, including any potential cost changes. Additionally the manager would have the capability to determine the costs of "crashing" any particular contract. In addition to normal construction operations, the Air Force needs would require integration into the CPM activities which are not normally within the COE area of responsibility, such as procurement and delivery of GFM/GFE.

Discussions with SAMSO/DEC indicated that the requirements stated in the Draft Construction Management Plan were based in part on the Navy's Construction Management System (CMS) being used for the Trident Program (11: Atch 1). Subsequent discussions with Air Force Institute of Technology personnel who investigated the Navy's program indicated that the Navy was experiencing difficulty with their system (1). Navy's CMS was developed primarily for use with Cost-Plus contracts and repetitive operations (1).

The idea of a detailed cost-loaded CPM is appropriate for this type of application; however, for fixed price contracts on a one-time basis, the complexity of Navy's CMS becomes prohibitive. The constant changes occurring in this type of construction program make it a practical impossibility to keep a detailed master CPM up-to-date, and the reluctance of contractors to reveal actual cost on a fixed price contract render any cost data questionable at best.

The COE's CPM [RA/PM] is a basic time-oriented schedule. It is general in nature and does not incorporate the detail of each separate contractor's schedule into the master schedule. It does have the capability of identifying critical interfaces and potential areas of conflict between contractors. Shop drawing submittals, critical material and equipment procurement, installation and testing of critical items, and GFM/GFE activities are not presently addressed by RA/PM. Additionally, the procurement and tracking of GFM/GFE items are not part of the COE responsibilities, and as such, are not incorporated into COEMIS.

AMPRS

As discussed earlier, AMPRS is the heart of the COE's construction management information system. Many of the needs requested by the Air Force which require a detailed, cost-loaded CPM can be satisfied with one of AMPRS'

standard or custom reports. All information on construction progress on any particular project including start date, completion date, percentage complete, days ahead or behind schedule , occupancy date, and remarks, as well as all cost data including award and contingency amounts and cost overruns or underruns is available in the District Construction Report. The District Exception Report is used to list all projects that show significant overruns or underruns in either cost or time.

The specific problem of change order tracking is only partially addressed by AMPRS. Change orders are addressed by status, modification number, time, and cost status on the "CWE Activity (049 record) Construction." The status columns are currently programmed to report only general status such as "pending" or "awarded." In conversations with Mr. Curtis Leblanc, the COE plans to expand the current program to include a much more detailed change order status. Up to 99 different status statements could be made avaliable.

AMPRS does not relate its data base to the RA/PM system, and, as such, can not produce lists of activities on the critical path or float schedules relative to the overall program. The information can be developed manually by comparing an individual contractor's progress to his own schedule and the master CPM. Other specific requirements can also be manually developed using AMPRS data,

such as bar charts indicating future construction activity.

In conclusion, virtually all information requested by the Air Force is, or soon will be available through AMPRS and RA/PM. It is not formated precisely as requested, but is presented in a complete and readable format. The specific information not available in COEMIS can be manually derived. It is the opinion of the research team that the time and cost necessary to develop and maintain a new program to completely satisfy validated needs would not be warranted.

Chapter 4

CONCLUSION

This research effort began with the objective of evaluating COEMIS as a management information system for the construction surveillance effort on the STS GSS program. There was some doubt on the part of SAMSO/DE that COEMIS could adequately fulfill the needs of the Air Force on this key construction program. In order to thoroughly evaluate COEMIS as a management tool, the research team developed a list of Air force needs from documents provided by SAMSO/DE, and validated those needs against existing regulations. The capabilities of COEMIS were fully researched and compared against the ideals established for an efficient, effective management information system. Finally, COEMIS capabilities were compared with Air Force needs. This step-by-step approach to the research problem has led the research team to the conclusion that three tasks should be accomplished before COEMIS can fully satisfy the needs of the Air Force on the STS GSS program.

First, Air Force personnel involved in the program should become familiar with the workings of COEMIS in two ways. Air force COEMIS users should gain a working knowledge of the various outputs and reports available, and should be able to accurately interpret the reports. Also,

Air Force COEMIS users should understand the internal workings of the system. Once this understanding is established, the research team believes that: 1) doubts about the capabilities of COEMIS to serve the STS GSS program will be dispelled, and 2) the Air Force will be in a better position to recommend modifications which can improve COEMIS' usefulness to the Air Force.

Second, the COEMIS data base should be configured to address both Army and Air Force areas of responsibility. Presently, COEMIS does not address portions of the program not directly managed by the Army. Areas such as procurement, delivery, and interface of GFM/GFE -- all Air Force management responsibilities -- if included in the data base could be of great value to both the COE and SAMSO given the following circumstances: 1) the Air Force and Army should locate and purchase time sharing capability on a Honeywell system large enough to handle COEMIS. No computer time is now available for COEMIS on the STS GSS program. 2) All data elements should be available to both services for examination, but should be changed or updated only by the service responsible for them. In other words, both services should have read permission on the entire data base, but each service should retain write permission only on their respective sections. This procedure will allow each service to modify its own data base as required without the possibility of tampering with the remainder.

Using the split data base along with existing report formats would allow both COE generated information (such as construction progress reporting) and Air Force generated information (such as GFM/GFE) to be produced on a single report. For example, a potential interface problem could be identified if construction progress was shown at 10% ahead of schedule and 3% above cost, and related GFM was shown to be 8% behind schedule and 2% above cost.

Third, the input/output process used by COEMIS should be based on a real time capability. Remote terminals, accessable to both services, should be available at Vandenberg AFB and SAMSO/DE in Los Angeles. With these terminals in place, inspectors and surveillance personnel could directly input data or change data elements without the expensive and time-consuming steps of writing the required information on coding forms, transmitting the forms, and key punching the data. With remote terminals and real time capability, COE and Air Force managers will have almost instant access to up-to-the-minute construction information. This final point, the requirement for real time capability, can not be overstated. It is the opinion of the research team that a project as dynamic and complex as the STS GSS program can not be successfully managed without a real time management information system.

In summary, this research effort concluded that COEMIS can provide an effective, efficient management

information system for construction management and surveillance on the WLS STS GSS program given:

1] Air Force involvement with COEMIS,

2] Establishment of a split data base, and

3] Implementation of real time capability.

Universal Applications

The COE is responsible for construction management on many of the Air Force's Major Construction Programs. A knowledge of the capabilities and limitations of COEMIS, as well as potential areas for improvement, could prove valuable to any Air Force manager charged with construction surveillance responsibility on a COE managed project. Implementation of the recommendations presented earlier in this chapter will insure Air Force needs are met on any construction project utilizing COEMIS for its management information system.

Recommendations for Further Research

During the course of the investigation into the construction management and surveillance capabilities of COEMIS, two areas surfaced which may warrant further investigation.

COEMIS design management capabilities. In addition to construction progress reporting, COEMIS also provides complete design management information. This type of program may be valid for Air Force applications at Major

Command level, or at bases with a large Architectural-Engineer design load.

Navy's Construction Management System (CMS). In many parts of the world, the Navy has responsibilities similar to those performed by the COE on the STS GSS program. An evaluation of the Navy system, along with a comparison between Army and Navy systems could be beneficial. In the superficial examination given the Navy's CMS during the course of this research, The Navy's CMS appears to be tailor-made for projects which are repetitive in nature such as the MX missile bed-down program. A comprehensive investigation comparing both the Army and Navy systems might be beneficial to construction managers in all services.

A

APPENDIX

DATA ELEMENT - REPORT MATRIX

REPORT NUMBER - TITLE LOG

NO.	TITLE
01	OFFICE OF CHIEF OF ENGINEERS CONSTRUCTION PROGRESS DAT
02	AIR FORCE STATUS OF DESIGN FUNDS WORKSHEET
03	DIVISION DESIGN REPORT
04	DIVISION CONSTRUCTION REPORT
05	DISTRICT DESIGN REPORTS
06	DISTRICT CONSTRUCTION REPORT
07	CONTRACT MODIFICATIONS AND PENDING ITEMS REPORT
08	DISTRICT EXCEPTION REPORTS
09	CPR PROJECT CWE REPORT
10	USING SERVICE DESIGN STATUS REPORT
11	USING SERVICE CONSTRUCTION STATUS REPORT
12	CONSTRUCTION MANAGEMENT REPORT
13	WORK PLACEMENT ESTIMATES PROJECT TOTALS
14	DESIGN BRANCH REVIEW SCHEDULE
AF	AIR FORCE CONSTRUCTION PROGRESS REPORT DATA
MD	MANAGEMENT INFORMATION AND DECISION ANALYSIS SYSTEM

MATRIX SYMBOLOGY:

X THIS CHARACTER, AT THE INTERSECTION OF A ROW, (DATA ELEMENT), AND A COLUMN, (OUTPUT REPORT NUMBER), SIGNIFIES THAT THE INDICATED DATA ELEMENT OCCURS IN THE INDICATED REPORT.

I THIS CHARACTER AT THE ROW AND COLUMN INTERSECTION SIGNIFIES THAT FOR THE INDICATED REPORT, THE INDICATED DATA ELEMENT IS IMPLIED; IN THAT, IN ORDER TO COMPUTE AN X MARKED VALUE OF A GIVEN OUTPUT REPORT, THE IMPLIED DATA ELEMENT MUST BE CONTAINED IN THE DATA BASE.

CHARACTERS AT THE LEFT MARGIN OF THE TABLE

F SIGNIFIES THAT THIS DATA ELEMENT IS OBTAINED FROM THE CORPS-WIDE STANDARD FINANCE AND ACCOUNTING DATA BASE.

N SIGNIFIES THAT THIS DATA ELEMENT IS NON-RECURRING, WHICH IS TO SAY THAT A MANUAL ENTRY FOR A GIVEN PROJECT ITEM IS REQUIRED FOR THIS DATA ELEMENT LESS FREQUENTLY THAN ONCE A YEAR.

C SIGNIFIES THAT THIS DATA ELEMENT HAS A COMPUTED VALUE AND IS NOT ENTERED MANUALLY.

WHERE NONE OF THE ABOVE 3 LETTERS, F,N,C, ARE PRESENT, THE INDICATED DATA ELEMENT MUST BE FREQUENTLY (SAY MONTHLY) UPDATED MANUALLY.

DATA ELEMENT - REPORT MATRIX

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 1234567890123	AM FD
N	22	10	ADP WORK CODE COLS 1-10	XXX X X	
N	24	1	AGENCY CODE		X
N	26	3	AGENCY SUB-DIVISION CODE		X
NC	28	2	AGENT SORT CODE	X	
NC	30	2	AIR FORCE REGIONAL CIVIL ENGR	X	
C	32	9	APPROVED PROGRAM AMOUNT	X X X	
	34	7	ARCHITECT-ENGINEER DESIGN BREAKAGE COST	X X	XX
	36	7	ARCHITECT-ENGINEER DESIGN COST - OTHER	X X	I
	38	7	ARCHITECT-ENGINEER DESIGN COST - OTHER AIR FORCE FUNDS	X X	
	40	7	ARCHITECT-ENGINEER DESIGN COST - P313 AND P714 FUNDS	X	X
	42	7	ARCHITECT-ENGINEER DESIGN COST - SITE INVESTIGATION	X X	I
	44	7	ARCHITECT-ENGINEER DESIGN COST - SUPERSEDED OR DELETED	X XI I	X
	46	7	ARCHITECT-ENGINEER DESIGN COST - SURVEY	X X	I
C	48	7	ARCHITECT-ENGINEER DESIGN FUNDS COST	1 X	X
F	50	7	ARCHITECT-ENGINEER DESIGN FUNDS OBLIGATED TO DATE	11 X	X
	52	4	ARCHITECT-ENGINEER DESIGN * COMPLETE	X	X
	54	7	ARCHITECT-ENGINEER E+D COST- BEFORE CONSTR CONTRACT AWD		X
F	56	7	ARCHITECT-ENGINEER E+D FUNDS IN PLACE TO DATE- BEFORE CONSTRUCTION CONTRACT AWARD		X
	58	7	ARCHITECT-ENGINEER EXPECTED DESIGN COST- AFTER CONSTRUCTION CONTRACT AWARD	X XI I	X
F	60	7	ARCHITECT-ENGINEER EXPECTED DESIGN COST- AFTER CONSTRUCTION CONTRACT AWARD- FUNDS IN PLACE TO DATE		X

SOURCE/TYPE •	AMPRS NUMBER •	FIELD WIDTH •	DATA ELEMENT NAME •	REPORT NUMBER 00000000011111 123456789012345	AM FU
	62	7	CONSTRUCTION CONTRACT AWARD	X XI I	
	64	7	ARCHITECT-ENGINEER FUNDS REQUIRED	X X	
C	66	7	ARCHITECT-ENGINEER PURE DESIGN COST	X X	I
	68	7	ARCHITECT-ENGINEER PURE DESIGN COST- CONCEPTS	X X	
	70	7	ARCHITECT-ENGINEER PURE DESIGN COST- FINALS	X X	
C	72	4	ARCHITECT-ENGINEER PURE DESIGN COST, % OF 90% CONTROL COST	X X	
	74	7	ARCHITECT-ENGINEER REVIEW COST		X
F	76	7	ARCHITECT-ENGINEER REVIEW FUNDS IN PLACE TO DATE		X
	78	7	ARCHITECT-ENGINEER SHOP DRAWING COST		X
	80	8	ARCHITECT-ENGINEER SHOP DRAWING FUNDS IN PLACE TO DATE		X
	82	7	ARCHITECT-ENGINEER SHOP DRAWING FUNDS OBLIGATED TO DATE		X
C	84	7	ARCHITECT-ENGINEER SITE INVESTIGATION COST	X	X
N	86	15	AREA/RESIDENT OFFICE	XX XX	
N	88	2	AREA/RESIDENT OFFICE CODE		
N	90	7	AUTHORIZATION LAW NUMBER	X XX	XX
N	92	2	AUTHORIZATION YEAR	X XX X X X	
	94	9	AUTHORIZED CONSTRUCTION FUNDS	X XX X	X
	96	7	AUTHORIZED DESIGN FUNDS	X X	
N	98	4	AUTHORIZED DESIGN %	X X	
	100	7	AUTHORIZED PHASE		X
NC	102	9	AWARD AUTHORIZED CONSTRUCTION FUNDS	XX X	X
N	104	9	AWARD CONSTRUCTION CONTRACT AMOUNT	X IXXX X	XI
NC	106	7	AWARD CONTINGENCY RESERVE		X
	108	2	AWARD DELAY CODE		X
NC	110	7	AWARD E+D COSTS CHARGED TO CONSTRUCTION FUNDS- AFTER CONTRACT AWARD		X
NC	112	9	AWARD GOVERNMENT FURNISHED MATERIALS, PURCHASE ORDERS, AND OTHER COST		X
			AWARD OTHER DIRECT CONSTRUCT-		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FL
NC	114	4	ION AGENCY COST	X	X
			AWARD SUPERVISION AND ADMIN-		
NC	116	7	ISTRATION COST ESTIMATE		X
NC	118	9	AWARD TOTAL UNAWARDED ESTIMATE		X
	120	3	BID ACCEPTANCE PERIOD		X
NC	122	1	CARD CODE	X X	
N	124	7	CATEGORY CODE	XXIIXXIX	XX
C	126	21	COMMON DATA ELEMENTS	X	
NC	128	2	CONGRESSIONAL DISTRICT	X XXX	
N	130	12	CONSTRUCTING OFFICE- AREA		X
N	132	12	CONSTRUCTING OFFICE- RESIDENT		X
N	134	3	CONSTRUCTION AGENT	X XX	XX
			CONSTRUCTION CALENDAR DAYS,		
NC	136	3	STANDARD	IX	X
			CONSTRUCTION CONTRACT ADDI-		
N	138	2	TIVES, NUMBER AWARDED	X	X
			CONSTRUCTION CONTRACT ADDI-		
N	140	2	TIVES, NUMBER BID	X	X
			CONSTRUCTION CONTRACT ADVER-		
	142	6	TISING AUTHORIZATION DATE	X	X
			CONSTRUCTION CONTRACT AWARD-		
C	144	4	DAYS AHEAD OR BEHIND SCHED	X X	
			CONSTRUCTION CONTRACT AWARD,		
N	146	9	HIGH BID	X	X
			CONSTRUCTION CONTRACT AWARD,		
N	148	9	LOW BID	X	X
			CONSTRUCTION CONTRACT AWARD,		
N	150	9	SECOND LOWEST BID	X	X
			CONSTRUCTION CONTRACT BID		
N	152	6	OPENING AUTHORIZATION DATE	X	X
			CONSTRUCTION CONTRACT CALENDAR		
N	154	3	DAYS	IXII X	XX
			CONSTRUCTION CONTRACT EXPECTED		
	156	6	ADVERTISING DATE	X XX	XX
			CONSTRUCTION CONTRACT EXPECTED		
	158	6	AWARD DATE	X XXXX X X	XX
			CONSTRUCTION CONTRACT EXPECTED		
	160	6	BID OPENING DATE	X XX X	XX
			CONSTRUCTION CONTRACT, GOVERN-		
	162	9	MENT BASE ESTIMATE	X	X
			CONSTRUCTION CONTRACT, GOVERN-		
	168	9	MENT TOTAL ESTIMATE	X	X
			CONSTRUCTION CONTRACT INVITA-		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FU
N	170	7	TION FOR BIDS NUMBER	X X X	X
			CONSTRUCTION CONTRACT, LOW		
N	172	9	BASE BID	X	X
			CONSTRUCTION CONTRACT, LOW		
N	174	9	TOTAL BID	X	X
			CONSTRUCTION CONTRACT MODIFI-		
			CATION FILE		
NC	176	5	SERIAL NUMBER	X X	
NC	178	7	INCEPTION DATE	X X	
NC	180	6	MODIFICATION NUMBER	X X	X
NC	182	7	SIGNATURE DATE	I X	X
			MODIFICATION/CWE TRANSACT-		
NC	190	40	ION DESCRIPTION	X X	X
NC	192	3	ORIGINATING AGENCY	X X	X
	194	2	STATUS	X X	
	196	7	STATUS DATE	X X	
	198	4	CONTRACT TIME CHANGE	X X	X
	200	10	CONTRACT COST CHANGE	IIIX X	XI
C	202	4	CONTRACT PERFORMANCE TIME		X
C	204	9	CONTRACT COST		X
C	206	3	MODIFICATION AGE	X X	
NC	208	1	MODIFICATION TYPE	X X	
			CONSTRUCTION CONTRACT NOTICE		
			TO PROCEED ACKNOWLEDGEMENT		
N	210	6	DATE	X X	X
			CONSTRUCTION CONTRACT NOTICE		
N	212	6	TO PROCEED DATE	X XX	IX
N	214	9	CONSTRUCTION CONTRACT NUMBER	X X XX X	XX
			CONSTRUCTION CONTRACT NUMBER		
N	216	3	OF BIDS RECEIVED	X	X
N	218	17	CONSTRUCTION CONTRACTOR	X X X XX	XX
			CONSTRUCTION CONTRACT ORIGINAL		
NC	220	6	SCHEDULED ADVERTISING DATE	X	
			CONSTRUCTION CONTRACT ORIGINAL		
			ARCHITECT-ENGINEER EXPECTED		
			DESIGN COST- BEFORE		
NC	222	6	SCHEDULED AWARD DATE	X X X	
			CONSTRUCTION CONTRACT ORIGINAL		
NC	224	6	SCHEDULED BID OPENING DATE	X	
	226	15	CONSTRUCTION COST CODES		X
			CONSTRUCTION CURRENT SCHEDULED		
	228	6	COMPLETION DATE	X X X X XX	XX
			CONSTRUCTION CURRENT SCHEDULED		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 000000000011111 123456789012345	AM FD
			COMPLETION DATE-		
	232	6	BASIC FACILITY	X	X
			CONSTRUCTION DAYS AHEAD OR		
C	234	4	BEHIND SCHEDULE	X X X	
N	236	6	CONSTRUCTION DIRECTIVE DATE	X	
N	238	17	CONSTRUCTION DIRECTIVE NUMBER	X X	
N	240	20	CONSTRUCTION DIVISION CHIEF		X
			CONSTRUCTION DIVISION S+I		
N	242	20	MANAGER		X
			CONSTRUCTION EXPECTED COMPLE-		
	243	6	TION DATE	X XXX X	X
			CONSTRUCTION FUNDS IN PLACE		
C	244	10	THIS FISCAL YEAR	X	
			CONSTRUCTION FUNDS IN PLACE		
C	246	10	THIS PERIOD	X	
			CONSTRUCTION FUNDS IN PLACE		
F	248	9	TO DATE	X I X XX	II
			CONSTRUCTION FUNDS OBLIGATED		
C	250	9	TO DATE	X X	
F	252	9	CONSTRUCTION FUNDS RECEIVED	X X X	X
			CONSTRUCTION FUNDS UNDERRUN		
C	254	10	OR OVERRUN	X X	
			CONSTRUCTION ORIGINAL SCHED-		
NC	258	6	ULED COMPLETION DATE	X X X X	
			CONSTRUCTION ORIGINAL SCHED- ULED COMPLETION DATE-		
NC	260	6	BASIC FACILITY	X	X
C	262	5	CONSTRUCTION % ACTUAL COMPLETE	X XIX XXX	XX
			CONSTRUCTION % ACTUAL COMPLETE		
C	263	3	- PRIOR PERIOD	X	
			CONSTRUCTION % COMPLETED-		
C	264	3	PERIOD BEFORE LAST	X X	X
			CONSTRUCTION % COMPLETED-		
C	266	3	THIS LAST PERIOD	X	X
			CONSTRUCTION % FUNDS UNDERRUN		
C	268	5	OR OVERRUN	X X	
			CONSTRUCTION % SCHEDULED		
C	270	3	COMPLETE	X X X X	X
			CONSTRUCTION % TIME UNDERRUN		
C	272	5	OR OVERRUN	X X	
	274	6	CONSTRUCTION START DATE	XXX X	IX
			CONSTRUCTION TIME - CAPACITY		
NC	276	3	CURVE NUMBER	I	I

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FU
C	278	7	CONTINGENCY RESERVE	X X X	XX
	280	4	CONTRACTOR EARNINGS PERIOD		X
N	282	9	CONTROL COST	XXX XX X X X	
N	284	1	CORPS S*A ONLY CODE	X XX	X
NC	286	3	COUNTY CODE	X	
	288	7	CURRENT/AUTHORIZED PHASE		X
	290	9	CURRENT WORKING ESTIMATE	X XXXX XXXXX	XX
NC	292	9	CURRENT WORKING ESTIMATE-AWARDED	X XX	XX
	294	1	CURRENT WORKING ESTIMATE-BASIS	X X XX	X
C	296	9	CURRENT WORKING ESTIMATE-BUDGETED		X
C	298	9	CURRENT WORKING ESTIMATE-CONCEPT BASE		X
C	300	9	CURRENT WORKING ESTIMATE-CONCEPT TOTAL		X
C	302	9	CURRENT WORKING ESTIMATE-FINAL BASE		X
C	304	9	CURRENT WORKING ESTIMATE-FINAL TOTAL		X
C	306	9	CURRENT WORKING ESTIMATE-FORECASTED	X	
	308	9	CURRENT WORKING ESTIMATE-LATEST PRE-AWARD BASE	XX	X1
	310	9	CURRENT WORKING ESTIMATE-LATEST PRE-AWARD TOTAL	XX	X1
N	312	9	CURRENT WORKING ESTIMATE-LOW BID BASE		X
N	314	9	CURRENT WORKING ESTIMATE-LOW BID TOTAL		X
C	316	9	DATE OF ENTRY	X	X
C	318	9	DATE OF OUTPUT	XX X	X
C	320	9	DATE OF UPDATE		X
	322	1	DD 813 CODE	X X X	X
N	324	6	DD FORM 1354 TRANSFER DATE	X X	X
	326	6	DEFICIENCY CORRECTION DATE	X	
	328	1	DESIGN ACTION AUTHORIZED	X	
N	330	3	DESIGN AGENT	X XX	XX
FC	332	11	DESIGN AND CONSTRUCTION * COMPLETION, MONTHLY, ACTUAL	I IIXX	XI
C	334	11	DESIGN AND CONSTRUCTION * COMPLETION, MONTHLY, SCHEDULED	I IIXX	XI

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 1234567890123	AM FU
N	336	20	DESIGN BRANCH PROJECT ENGINEER		
	338	1	DESIGN BRANCH PURE DESIGN COST		X
F	340	7	DESIGN BRANCH PURE DESIGN FUNDS IN PLACE TO DATE		X
C	342	3	DESIGN CALENDAR DAYS- EXPECTED		X
N	344	3	DESIGN CALENDAR DAYS- STANDARD	X1	
	346	6	DESIGN CONCEPTS APPROVAL DATE	X	X
C	348	3	DESIGN CONCEPTS CALENDAR DAYS	X X X	X
	350	6	DESIGN CONCEPTS COMPLETION DATE- EXPECTED	X	X
NC	352	6	DESIGN CONCEPTS COMPLETION DATE- ORIGINAL SCHEDULE	X X X	XX
	354	6	DESIGN CONCEPTS SUBMISSION DATE	X X	
N	356	4	DESIGN CONTRACT NUMBER	X X X X	X
N	358	17	DESIGN CONTRACTOR	X X	X
	360	15	DESIGN COST CODES	X XX X	X
	362	6	DESIGN CRITERIA AVAILABLE DATE		XX
N	364	6	DESIGN CRITERIA ISSUE DATE- DIVISION OFFICE	X X	X
N	366	6	DESIGN CRITERIA ISSUE DATE- USING SERVICE		X
	368	6	DESIGN CURRENT SCHEDULED COMPLETION DATE		X
C	370	4	DESIGN DAYS AHEAD OR BEHIND SCHEDULE	X I XX X X	I
	372	2	DESIGN DELAY CODE	X XX X	
N	374	6	DESIGN DIRECTIVE DATE		X
N	376	15	DESIGN DIRECTIVE NUMBER	X X	X
N	378	2	DESIGNED BY	X X	
	380	6	DESIGN EXPECTED COMPLETION DATE		X
C	382	8	DESIGN FUNDS IN PLACE THIS FISCAL YEAR	X X XX X	XX
C	384	8	DESIGN FUNDS IN PLACE THIS PERIOD	X	
F	386	7	DESIGN FUNDS IN PLACE TO DATE	X	
C	388	1	DESIGN FUNDS OBLIGATED TO DATE	X I X	
F	390	7	DESIGN FUNDS OBLIGATED TO DATE - OTHER AIR FORCE FUNDS	XX X	II XX
F	392	7	DESIGN FUNDS OBLIGATED TO DATE - P313 AND P714 FUNDS	X	X
FC	394	7	DESIGN FUNDS RECEIVED	X	
				XI X	X XX

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FD
			DESIGN FUNDS RECEIVED TO DATE-		
F	396	7	OTHER AIR FORCE FUNDS	X	X
			DESIGN FUNDS RECEIVED TO DATE-		
F	398	7	P313 AND P714 FUNDS	X	X
			DESIGN FUNDS UNDERRUN OR		
C	400	8	OVERRUN	X X	
			DESIGN FUNDS UNOBLIGATED TO		
C	402	7	DATE	X X	
N	404	6	DESIGN INSTRUCTION ISSUE DATE	X	X
N	406	18	DESIGN METHOD		X
			DESIGN ORIGINAL SCHEDULED		
NC	408	6	COMPLETION DATE	X X XX X	X
C	410	5	DESIGN % ACTUAL COMPLETE	X X XI X	XX
			DESIGN % ACTUAL COMPLETE-		
C	412	3	CURRENT FISCAL YEAR TO DATE		X
			DESIGN % ACTUAL COMPLETE-		
C	414	3	FORECAST, CURRENT FISCAL YR		X
			DESIGN % ACTUAL COMPLETE-		
C	416	3	PRIOR FISCAL YEAR		X
C	418	4	DESIGN % COMPLETE, PRIOR MONTH	X	
			DESIGN % FUNDS UNDERRUN OR		
C	420	5	OVERRUN	X X	
			DESIGN % OF 90% OF PROGRAM		
C	422	4	AMOUNT		X
C	424	3	DESIGN % SCHEDULED COMPLETE	X X X	
			DESIGN % TIME UNDERRUN OR		
C	426	5	OVERRUN	X X	
N	428	2	DESIGN PRIORITY	X	
	430	7	DESIGN REPRODUCTION COST		X
			DESIGN REPRODUCTION FUNDS		
F	432	7	IN PLACE TO DATE	X	X
	434	3	DESIGN REVIEW CALENDAR DAYS	X	
N	436	6	DESIGN REVIEW PROCEDURE		X
	438	6	DESIGN START DATE	X X XI X X	XX
	440	7	ADMINISTRATION COST	X	XX
			DESIGN SUPERVISION AND		
F	442	7	IN PLACE TO DATE		X
			DIRECT CONSTRUCTION CONTRACT		
C	444	9	COST ESTIMATE	X XXX I X	XX
N	446	12	DIRECTIVE, NUMBER, DATE		X
N	448	28	DISTRIBUTION LIST	XXXXXXX	X
NC	450	3	DISTRICT ABBREVIATION	X	
			DESIGN SUPERVISION FUNDS		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 000000000111111 123456789012345	AM FU
N	452	20	DISTRICT ENGINEER		X
	454	7	DISTRICT ENGINEER DESIGN BREAKAGE COST	X X	XX
	456	7	DISTRICT ENGINEER DESIGN COST- OTHER	X X	I
	458	7	DISTRICT ENGINEER DESIGN COST- OTHER AIR FORCE FUNDS	X	X
	460	7	DISTRICT ENGINEER DESIGN COST- P313 AND P714 FUNDS	X	X
	462	7	DISTRICT ENGINEER DESIGN COST- SITE INVESTIGATION	X X	I
	464	7	DISTRICT ENGINEER DESIGN COST- SUPERSEDED OR DELETED	X XI I	X
	466	7	DISTRICT ENGINEER DESIGN COST- SURVEY	X X	I
C	468	7	DISTRICT ENGINEER DESIGN FUNDS COST	I X	X
F	470	7	DISTRICT ENGINEER DESIGN FUNDS OBLIGATED TO DATE	II X	I
C	472	7	DISTRICT ENGINEER E+D COST- BEFORE CONSTR CONTRACT AWD		X
C	474	7	DISTRICT ENGINEER E+D FUNDS IN PLACE TO DATE- BEFORE CONSTRUCTION CONTRACT AWARD		X
	476	7	DISTRICT ENGINEER EXPECTED DESIGN COST- AFTER CONSTRUCTION CONTRACT AWARD	X XI I	X
F	478	7	DISTRICT ENGINEER EXPECTED DESIGN COST- AFTER CONSTRUCTION CONTRACT AWARD- FUNDS IN PLACE TO DATE		X
	480	7	DISTRICT ENGINEER EXPECTED DESIGN COST- BEFORE CONSTRUCTION CONTRACT AWARD	X XI I	
C	482	7	DISTRICT ENGINEER FUNDS REQUIRED	X X	
C	484	7	DISTRICT ENGINEER PURE DESIGN COST	X X	X
	486	7	DISTRICT ENGINEER PURE DESIGN COST- CONCEPTS	X X	
	488	7	DISTRICT ENGINEER PURE DESIGN COST- FINALS	X X	
			DISTRICT ENGINEER PURE DESIGN		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FU
C	490	7	COST- LESS S+A	X	X
			DISTRICT ENGINEER PURE DESIGN		
C	492	4	COST, % OF 90% CONTROL COST	X X	
			DISTRICT ENGINEER SITE		
C	494	7	INVESTIGATION COST	X	X
NC	496	3	DIVISION ABBREVIATION	X	
			ENGINEERING AND DESIGN COSTS		
	498	7	AFTER CONTRACT AWARD	X IX I X	XX
			CHARGED TO CONSTR FUNDS-		
			ENGINEERING AND DESIGN COSTS		
			CHARGED TO CONSTR FUNDS-		
			AFTER CONTRACT AWARD-		
C	500	7	FUNDS IN PLACE TO DATE	X	X
			ENGINEERING AND DESIGN COSTS		
	502	7	BEFORE CONTRACT AWARD	X XX I X	IX
			CHARGED TO CONSTR FUNDS-		
			ENGINEERING AND DESIGN COSTS		
			CHARGED TO CONSTR FUNDS-		
			BEFORE CONTRACT AWARD-		
F	504	7	FUNDS IN PLACE TO DATE	X	X
			ENGINEERING COSTS AS % OF		
C	506	5	CONSTRUCTION COSTS	X XX	
N	508	20	ENGINEERING DIVISION CHIEF		X
			ENVIRONMENTAL IMPACT STATEMENT		
	510	6	SUBMISSION DATE	X	
	512	6	FINAL DESIGN APPROVAL DATE	X X X	X
			FINAL DESIGN AUTHORIZATION		
N	514	6	DATE	X	X
C	516	3	FINAL DESIGN CALENDAR DAYS	X	
N	518	6	FINAL DESIGN DIRECTIVE DATE	X	
	520	6	FINAL DESIGN START DATE	X XI	X
	522	6	FINAL DESIGN SUBMISSION DATE	X X X	X
			FINAL PAYMENT TO CONTRACTOR		
N	524	6	DATE	X	X
C	526	6	FINANCIALLY COMPLETED DATE	X X	XX
			FOUNDATIONS AND MATERIALS		
	528	7	BRANCH COST		X
			FOUNDATIONS AND MATERIALS		
			BRANCH FUNDS IN PLACE TO		
F	530	7	DATE		X
			FUNDS TYPE AND BUDGET AUTHOR-		
N	532	13	IZATION ACCOUNT NUMBER	XX	X
			GOVT FURNISHED MATERIALS, PUR-		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 0000000001111 1234567890123	AM FD
	544	4	CHASE ORDERS AND OTHER COST	X	X
	546	7	INDIRECT COSTS		X
F	548	7	INDIRECT FUNDS IN PLACE TO DATE		X
NC	550	6	LINE ITEM NUMBER	X XX XX	X
N	552	4	LIQUIDATED DAMAGES	X	X
N	556	7	MIDAS NUMBER		X
N	558	20	MILITARY BRANCH PROJECT MANAGER		X
N	560	20	MILITARY BRANCH SECTION CHIEF		X
	562	80	NOTES AND NARRATIVES	XX XXX X	XX
	564	6	OCCUPANCY DATE- EXPECTED	X XXX X	XX
NC	566	6	OCCUPANCY DATE- ORIGINAL SCHEDULE	X	
N	568	8	OCE ITEM CODE- CONSTRUCTION	X	X
N	570	8	OCE ITEM CODE- DESIGN		X
C	572	9	OTHER DIRECT CONSTRUCTION AGENCY COST	X	X
	574	9	OTHER DIRECT COSTS (FUNDED WITH CONSTRUCTION FUNDS)	X X X	IX
	576	7	OTHER DIRECT COSTS (FUNDED WITH DESIGN FUNDS)	X I IX I	IX
F	578	7	OTHER DIRECT COSTS (FUNDED WITH DESIGN FUNDS)- FUNDS IN PLACE TO DATE	X	X
	580	7	OVERHEAD COSTS		X
F	582	7	OVERHEAD FUNDS IN PLACE TO DATE		X
N	584	2	PACKAGE PROGRAM	X XX	
C	586	6	PAGE NUMBER	XXXXXXXXXXXXX	XX
NC	588	10	PEMA PROJECT NUMBER	X	
	590	8	PRECONCEPT DESIGN SUMMISSION DATE		X
	592	2	PRIMARY DELAY CODE	X X XX X	X
N	594	1	PROGRAM CODE		X
N	596	8	PROGRAM ELEMENT	X	X
N	598	2	PROGRAM YEAR	XXXX XX	IX
N	600	6	PROJECT DELETION DATE	X	X
NC	602	17	PROJECT DESCRIPTION	XXX XXXXXXX	XX
N	604	12	PROJECT ENGINEER	XX X	X
N	606	7	PROJECT NUMBER	XIXXX XXXXX	IX
N	608	7	PROJECT NUMBER- CONSTRUCTION REAL ESTATE EXPECTED AVAILABLE		X

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FD
	600	6	DATE	X XX	X
			REAL ESTATE ORIGINAL SCHEDULED		
NC	602	6	AVAILABLE DATE	X	
	604	7	RECORD DRAWINGS COST		X
C	606	9	REPORT DATE	XXXXX XX X	XI
NC	608	15	REPORTING DISTRICT	XXXXXXX	X
NC	610	15	REPORTING DIVISION	XXXXXXX	
NC	612	3	REPORTING ORGANIZATION	XI XX	
NC	614	80	REPORT NAME	XXXXXXX	X
NC	616	2	REPORT NUMBER	XX	X
C	618	20	REVISED CONTROL FIELDS	X	
	620	6	SCOPE- EXPECTED	X X XX X	XX
NC	622	6	SCOPE- ORIGINALLY AUTHORIZED	X	X
	624	2	SECONDARY DELAY CODE	X X XX X	X
NC	626	11	SHORT STATION NAME	X XXX	
NC	628	17	STATE OR COUNTRY		X
NC	630	2	STATE OR COUNTRY CODE	X	X
N	632	28	STATION	XXXXX XX	XX
N	634	6	STATION CODE		X
NC	636	4	STATION SORT CODE	X	
	638	1	STATUS CODE	X X XXI X	I
			SUPERVISION AND ADMINISTRATION		
C	640	7	COST ESTIMATE	X X X XX	XX
			SUPERVISION AND ADMINISTRATION COSTS AS % OF CONSTRUCTION		
C	642	5	COSTS	X X	
			SUPERVISION AND ADMINISTRATION		
C	644	8	COSTS UNDERRUN OR OVERRUN	X X	
			SUPERVISION AND ADMINISTRATION		
C	646	5	% COSTS UNDERRUN OR OVERRUN	X X	
	648	7	SURVEY COST	X	X
F	650	7	SURVEY FUNDS IN PLACE TO DATE		X
N	652	3	TENANT ABBREVIATION	XX	X
			TOTAL ARCHITECT-ENGINEER COSTS		
C	654	7	CHARGED TO E+D FUNDS	X I XI	
C	656	7	TOTAL DESIGN BREAKAGE COST	X X	X
C	658	7	TOTAL DESIGN COST	X X XX I	I
C	660	7	TOTAL DESIGN COST- OTHER	X X	
			TOTAL DESIGN COST- SITE INVES-		
C	662	7	TIGATION	X X	
C	664	7	TOTAL DESIGN COST- SURVEY	X X	
C	666	7	TOTAL DESIGN FUNDS COST	X X	X
			TOTAL DESIGN PHASE COST- OTHER		

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FU
C	668	7	AIR FORCE FUNDS	X	X
C	670	7	TOTAL DESIGN PHASE COST- P313 AND P714 FUNDS	X	X
C	672	9	TOTAL DIRECT CONSTRUCTION COST	IX X	I
C	674	9	TOTAL DIRECT CONSTRUCTION COSTS CHARGED TO CONSTRUCTION FUNDS	X IX I	
C	676	7	TOTAL DISTRICT ENGINEER COSTS CHARGED TO E+D FUNDS	X I XI	
C	678	7	TOTAL ENGINEERING AND DESIGN COST	XX X	
C	680	7	TOTAL E+D COST- BEFORE CONSTR CONTRACT AWD		X
C	682	7	TOTAL ENGINEERING AND DESIGN COSTS CHARGED TO CONSTRUCTION FUNDS	X IX I	IX
F	684	7	TOTAL ENGINEERING AND DESIGN COSTS CHARGED TO CONSTRUCTION FUNDS- FUNDS IN PLACE TO DATE	X	X
C	686	7	TOTAL E+D FUNDS IN PLACE TO DATE- BEFORE CONSTRUCTION CONTRACT AWARD		X
C	688	7	TOTAL SITE INVESTIGATION COST	X	X
C	690	7	TOTAL SUPERSEDED OR DELETED COSTS	X I XI	
C	692	9	TOTAL UNAWARDED ESTIMATE	X X X	XX
N	696	1	TYPE CONSTRUCTION CODE	X XX	X
N	698	2	TYPE FUNDS	X XX X X	
N	700	6	TYPE FUNDS ABBREVIATION		X
NC	702	2	UNIT OF MEASURE	X X XX X	XX
C	704	1	UPDATE CODE	X	
N	706	3	USING COMMAND	XX	X
N	708	2	USING SERVICE	X XXXX X	X
	710	6	WAGE RATES EXPIRATION DATE	X	X
C	712	9	WORK PLACEMENT ESTIMATE+ BUDGET YEAR	X X X	X
C	714	9	WORK PLACEMENT ESTIMATE+ PRIOR YEARS	X X	X
C	716	9	WORK PLACEMENT ESTIMATE+ SUBSEQUENT YEARS	X X	X
	718	6	WORK PLACEMENT ESTIMATE+ S+A RATE	X X	II

SOURCE/TYPE	AMPRS NUMBER	FIELD WIDTH	DATA ELEMENT NAME	REPORT NUMBER 00000000011111 12345678901234	AM FD
			WORK PLACEMENT ESTIMATE,		
N	720	1	S+A RATE CODE	X X	X
N	722	2	WORK PLACEMENT SCHEDULE DISTRIBUTION		

B

APPENDIX

• 4377 CARD OUTPUT LISTING •

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         1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890

8YO04991 10010400074C                          001930              9098       4

8YO04991 10310500074C      000344000044                                       3
8YO04991 10010500074C                     002401002278                        4

8YO04991 10010000075C      000017000640026U077                                3
8YO04991 10010900075C A01094121           001729000364             0723•056   4

8YO04991 19090400073CFINAL PAYMENT 6 JULY 75
                                                                              6
8YO04991 19092000744UYHUY01774PAINT SPRAY RM         A00040  87290  P          1
8YO04991 19092000744000300000000000700000-000000741203741203750603750603750812 2
8YO04991 19092000744000470000000000000000000070000000751115751115751115        3
8YO04991 19092000744E000050766005000050005100000002TUN  •••••000000•000        4
8YO04991 19092000744000000000000410000005F                   0574C00420976C0011 5
8YO04991 190920006744                                                         6
8YO04991 190920000744                                                         7

8YO00068 12091700075C000050               0003         751026751026751026     3
8YO00068 12091700075C                                              1016       4
8YO00068 12091700075CSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS6

8YO00068 12730100173C                          000303                         4

8YO00517 14091600075C
8YO00517 14091600075C                                  750925750924750924     3
8YO00517 14091600075CDELIVERY DATE ON FIXTURE CHANGED              8000       4
                                                                              6
8YOFBNV  20000100075C                          000118              5424•096   4

8YOFBNV  20000200075C                                  760621
8YOFBNV  20000200075C 001540300                000157              0707       3
8YOFBNV  20000200075CSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS4
                                                                              6
8YOFBNV  20000300075C                          000118              7272•000   4

8YOFSPM  20000100072C                                 U0                      4

8YOFSPM  20000100073C            000000                            741123     3
8YOFSPM  20000100073CG000411401        000416         3F8                     4
8YOFSPM  20000100073C000393                                                   5
8YOFSPM  20000100073CFISCAL COMPLETION 18JUN75                                6

8YOFSPM  20000100074C            0000000000                                   3
8YOFSPM  20000100074C                                              7878       4

8YOFSPM  20000100075C                                              6303       4

8YOFSPM  20010600072C002503      00005L00910123                               3
8YOFSPM  20010600072C                          002057               90•070    4
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DIVISION CONSTRUCTION REPORT

U.S. ARMY ENGINEER DIVISION(SOUTH PACIFIC — PROGRAM(MILITARY CONSTRUCTION, AIR FORCE — REPORT DATE(31MAY78

U.S. ARMY ENGINEER DISTRICT(LOS ANGELES — USING SERVICE(HI — PAGE NUMBER(8

STATION(EDWARDS AFB CALIFORNIA

PROJ NO FY	TFS NUMBER	CONTRACT NUMBER	APPROVED CHF	CONTRACT AMOUNT	AWARD DATE	NTP ACK DATE	START DATE	OCCUPAN CY DATE	ORG SCH COMPLET	CUR SCH COMPLET	EXPECTD COMPLET	PERCENT SCH	ACT TR	DD-1354 DATE	A 1 3 C D
DESCRIPTION(		CONTRACTOR(				REMARKS(									
0106000 72	7800020	0974C0020	2755	2598	26SEP73	19OCT73	19OCT73	30JUN76	27FEB75	30JUN76	30JUN76	**	**	27FEB75	3
FUEL WASTE TRMT		HAECON, INC.					FISCAL COMPLETION 31JAN78								
0001000 74	75H0023	0975C0016	819	770	13NOV74	21DEC74	21DEC74	30DEC75	17OCT75	30NOV75	30DEC75	**	**	17OCT75	1
ROCKET PROP LAB		CHAMELEON ENG COR					FINAL PYMT 15NOV76-AWAITING COMPL OF SUB-LI								
0001001 74	77H0014	0977C0020	60	47	07MAR77	14MAR77	15MAR77	30NOV77	11JUN77	30SEP77	30NOV77	**	**	12JUN77	1
ALT TO RPP FAC		LA AIR COND INC					FINAL EST NOT RECD IN DIST OFC								
0003000 76	76R0112	0976C0042	655	610	23JUN76	12AUG76	12AUG76	01JUL78	08JUL77	08JUL77	01JUL78	**	9R	08JUL77	3
EMER FLEC P4 PL		CHAYNE CONST. CO.					GENERATOR RETURNED FOR REPAIRS								
0005000 78	7800020	0978C0020	151	141	02FEB78	21FEB78	15FEB78	20AUG78	14AUG78	20AUG78	20AUG78	1R	1R	14AUG78	1
ALT HEATING PLT		ARK PLUMMECH IN					LATE DELV OF TANKS								

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DISTRICT CONSTRUCTION REPORT

U.S. ARMY ENGINEER DIVISION[SOUTH PACIFIC | PROGRAM YR[73 | REPORT NUMBER[07

U.S. ARMY ENGINEER DISTRICT[LOS ANGELES | USING SERVICE S1 | REPORT DATE[30APR75

STATION[VANDENBERG AFB CALIFORNIA | REPORTING ORGANIZATION[0Y0 | PAGE NUMBER[63

•PROJECT DESCRIPTN•	PROJ NO.	• LINE ITEM•	ADP CODE	• CAT CODE	•TYPE CONSTR•	SCOPE-UM	• PACK PROG	• PROJECT ENGINEER
• AIRMEN DORM	• 0903000	• 903 •		• 722211	• P	• 650 MN	•	• NO PE 97 REC

•CONSTR CONTRACTOR•	CONTRACT NO	STAT CODE•	1 DELAY 2	• S•A ONLY	• S•A CODE	• S•A RATE	•DIRECTV DT•	CONSTR DIRECTIVE
•A.HOLD, FRED INC	• 0975C00J7•	U	• D0 00	•	• F	• 5.0%	• 22MAR74	• MIPR CE 74-5

•DESIGN CONTRACTOR•	DES AGENT•	CON AGENT•	USING CMD	• TENANT	• AUTH LAW	• AUTH YR	• TYPE FUNDS•	TYPE FUNDS BAAN
•	•	• 0Y0	• S1	• S1	•	• 73	• 20	• 000

CONTROL COST	$	68000	CONSTR FUNDS OVER/UNDER	$	32	CONSTR CONTR AWD HIGH BID	$	0
AUTHORIZED FUNDS	$	71600	CONSTR FUNDS RECEIVED	$	71568	CONSTR CONTR AWD 2ND LOW	$	0
AWARD AUTHORIZED FUNDS	$	71600	CONSTR FUNDS OBLIGATED	$	71568	CONSTR CONTR AWD LOW BID	$	0
CWE AWARDED	$	71568	CONSTR FUNDS IN PLACE	$	28000	CONSTR CONTR LOW BASE BID	$	0
CWE	$	71568	WORK PLACE EST PRI YR	$		CONSTR CONTR LOW TOTL BID	$	0
AWARD CONSTR CONTR AMT	$	67568	WORK PLACE EST BUDGET YR	$	68000	CONSTR CONTR GOV BASE EST	$	2751500
DIRECT CONSTR CONT EST	$	67569	WORK PLACE EST SUBSQNT YR	$		CONSTR CONTR GOV TOTL EST	$	3079000
OTHER DIR WITH CONST	$		S•A COST OVER/UNDER	$	595-	E•D TO CONSTR BEF AWD ACT	$	0
TOT DIRECT CONSTR COST	$	67568	GOVT FURN MAT P.O. + OTHR	$	0	E•D TO CONSTR AFT AWD ACT	$	45523
TOTAL UNAWARDED EST	$		OTHR DIR CONSTR AGNCY CST	$	0	TOT E•D TO CONSTR ACTUAL	$	45523
CONTINGENCY RESERVE	$	27	CWE LATEST PRE-AWD BASE	$	0	OTHR DIR WITH DESIGN ACT	$	0
S•A COST EST.	$	3973	CWE LATEST PRE-AWD TOTAL	$	0	OTHR DIR CST W/DES FUNDS	$	0
E•D COSTS TO CONSTR BEFOR	$	0	LIQUIDATED DAMAGES	$	0	TOTAL DIRECT CONSTR COST	$	67568
E•D COSTS TO CONSTR AFTER	$	0				TOTAL DESIGN COST	$	0
TOT E•D CST CHGD TO CONST	$					TOTAL FUNDS • DESIGN	$	

DESIGN ORIG SCH COMPLETE	14MAR74	CONSTR CONTR ORIG SCH BID OPN	UNKNOWN	CONSTR CURRENT SCH COMPLETE	23AUG75
DESIGN CURRENT SCH COMPLETE	14MAR74	CONSTR CONTR EXP BID OPEN	UNKNOWN	CONSTR EXPECTED COMPLETE	23AUG75
DESIGN EXPECTED COMPLETE	14MAR74	CONSTR CONTR ORIG SCH AWD	14AUG74	OCCUPANCY DATE ORIG SCH	22AUG75
REAL ESTATE ORIG SCH AVAIL	UNKNOWN	CONSTR CONTR EXPECT AWD	14AUG74	OCCUPANCY DATE EXPECTED	22AUG75
REAL ESTATE EXPECTED AVAIL	UNKNOWN	CONSTR CONTR NTP DATE	26AUG74		
		CONSTR CONTR NTP ACKNOL DATE	31AUG74	DD FORM 1354 TRANSFER DATE	22AUG75
CONSTR CONTR ADVER AUTHORIZN	UNKNOWN	CONSTR START DATE	31AUG74	DEFICIENCY CORRECTION	UNKNOWN
CONSTR CONTR ORIG SCH ADVER	UNKNOWN	CONSTR ORIG SCH COMPLET BASIC	UNKNOWN	FINAL PAYMENT TO CONTRACTOR	UNKNOWN
CONSTR CONTR EXP ADVERTISE	UNKNOWN	CONSTR CURR SCH COMPLET BASIC	UNKNOWN	FINANCIALLY COMPLETE	UNKNOWN
CONSTR CONTR BID OPN AUTHORIZN	UNKNOWN	CONSTR ORIG SCH COMPLETE	23AUG75	WAGE RATES EXPIRATION	UNKNOWN

•PERCENT COMPLETE	PRIOR YEAR												CURRENT YEAR									
•	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
• SCHED																02	07	15	25	37	50	55	69	85
• ACTUAL																49	49	48	48	48	48	55	68	48

CONSTR DAYS AHEAD/BEHIND		CONSTR % TIME UNDER/OVER	%		CONSTR % FUNDS UNDER/OVER	%	
CONSTR CONTR AWD AHEAD/BEHIND		CONSTR % SCHED COMPLETE	%	68	S•A % COSTS UNDER/OVER	%	-1
DESIGN DAYS AHEAD/BEHIND		CONSTR % ACTUAL COMPLETE	%	68	S•A COST AS % OF CONSTR	%	6
CONSTR CONTR CALENDAR DAYS	374	CONSTR % COMPLETE THIS LAST	%	13	E•D COST AS % CONSTR	%	
CONSTR CALENDAR DAYS STANDARD	374	CONSTR % ACTUAL COMPLETE PRI	%	55	CONSTR CONTR ADD NUMB AWARDED		
CURRENT WORKING ESTIMATE BASIS	E	CONSTR % COMPLET PER REF LAST	%	50	CONSTR CONTR ADD NUMB BID		
AREA/RESIDENT OFFICE VANDENBERG PROJ		DD 813 CODE		2	CONSTR CONTR NUMB BIDS RECEVD		6
					CONSTR CONTR IFB NO		057470148

CONTRACT MODIFICATIONS AND PENDING ITEMS REPORT

STATION(

U.S. ARMY ENGINEER DISTRICT(LOS ANGELES — REPORT DATE(30JUN75

FIELD OFFICE-AREA/RES/PROJ(MARCH PROJ OFF — MARCH AFB CALIFORNIA — PAGE NUMBER(34

PROJECT DESCRIPTION/NUMBER(COMP MED FAC — 0001000-73

IO COL ADP WORK CODE	CONTRACT NUMBER	SER NO.	INCEPTN DATE	MOD. NO.	MODIFICATION TRANSACTION DESCRIPTION	ORG AGY	STA TUS	STATUS DATE	CHANGE COST	CRG/ DAYS	MOD AGE	MOD TYP
KA30053001	0974C0056	C8001	19AUG74	.	AS-BUILT DRAWINGS MCAF 75-9 ACTIV 1 2	AF	6	19AUG74	4000			
KA30053001	0974C0056	C8015	30JAN75		OSM CHNG FIRE WALL DA2544 75-14 ACT 10	COE	6	26FEB75	600			
KA30053001	0974C0056	LC002	06AUG74	P00001	SL6 REUSE EX WATE-LINE ACT 308 75-	COE	6	07NOV74	3900			
KA30053001	0974C0056	LC003	13SEP74	P00002	SL8 REUSE EX SUN SCREEN ACT 313 MCD75-	COE	6	08NOV74	1050-			
KA30053001	0974C0056	CL004	29AUG74	P00003	SL7 DUST WALL IN AREA 2A ACT307 MCD75-	AF	6	11NOV74	2090			
KA30053001	0974C0056	CL005	09SEP74	P00004	SL5 ADDED CURB REMOVAL ACT311 MCD75-75	AF	6	12NOV74	1950			
KA30053001	0974C0056	CL006	13SEP74	P00005	SL4 FURN OFFICE SPACE ACT 312 MCD 75-7	AF	6	13NOV74	4975			
KA30053001	0974C0056	CL007	09SEP74	P00006	SL3 HRCP IN LIEU OF RCP ACT 310 MCD75-	COE	6	14NOV74	1050-			
KA30053001	0974C0056	CL008	09SEP74	P00007	SL1 WASTE-BURROW BLDG FT ACT309 MCD75-	COE	6	15NOV74	34944			
KA30053001	0974C0056	CL009	18NOV74	P00008	TIME EXT TO 31MAR75 (COVERED IN ER CON	COE	6	18NOV74				
KA30053001	0974C0056	LC010	26JUN74	P00009	SL2 MODIFY GEN SPEED ACT104 MCD75-189	HFO	6	24JAN75	14500-			
KA30053001	0974C0056	LC011	05NOV74	P00011	SL-12 3A FTG. 4J SDWALK ACT330 MCD-75-2	COE	6	06MAR75	495			
KA30053001	0974C0056	LC012	11NOV74	P00010	SL-13,15,16,17 & 18 CHGS ACT329 MCD75-24	HFO	6	04MAR75	23-			
KA30053001	0974C0056	LC019	05FEB75	P00012	SL-19 CASEWORK-C85-C89 MCD75-306ACTV# 3	HFO	6	23MAY75	1928-			
KA30053001	0974C0056	LC020	12MAR75		SL-21 MOD DOORS NFPA101 5-362 ACTV# 3		6	13JUN75	9900		110	
KA30053001	0974C0056	LC021	17APR75		SL-24 CHGE IN B37-41-42 ACTV# 4		5	24APR75	100-		74	
KA30053001	0974C0056	LC022	25APR75		SL-25 RELOCAT DELTA 2000 S-359 ACTV#3		5	13JUN75	25946	+3	66	
KA30053001	0974C0056	LC023	19MAY75		SL-26 REF FEED PANEL MIX ACTV# 3		5	23MAY75	300		42	

DISTRICT EXCEPTION REPORT

U.S. ARMY ENGINEER DISTRICT: LOS ANGELES — PROGRAM: MCAF — REPORT DATE: 31MAY78

TYPE OF OVERRUN CONSTRUCTION FUNDS — PAGE NUMBER: 7

STATION: EDWARDS AFB CALIFORNIA

PROJECT NUMBER	PROJECT DESCRIPTION	SCOPE	UN IT	AU YR	TP ED	CONTRL COST -(000)	CONSTRUCTION CONTRACTOR	PROJECT ENGINEER	DELAY 1	DELAY 2	TOT DIR CON CST -(000)-	AUTH FUNDS -(000)-	CURRENT PKG EST -(000)-	COST OVERRUN -(000)-	% OVER
0001000	FLT TEST CNTROL	76800	SF	78	20	7690		OLSEN JS	DO			0	7963	7963-	0.0
0001000	ALT PROP RESRCH	0		76	20	1476		OLSEN JS	DO			0	2599	2599-	0.0
0002000	ALTEN REQ	880	MN	78	20	3280		OLSEN JS	DO			0	20	20-	0.0
0003000	EMER ELEC PW PL	1	LS	76	20	618	CHAYNE CONST. CO.	OLSEN JS	CE		610	660	655	5	0.8
0003000	LIBRARY	7752	SF	78	20	615		OLSEN JS	DO			0	582	582-	0.0
0003001	LIBRARY SOLAR	0		78	20			OLSEN JS	DO	DO		0	41	41-	0.0
0004000	ALT HEAT SYSTM	0		78	20	501		OLSEN JS	DO			0	553	553-	0.0
0T01000	MODDES/INSP SHP	8000	SF	79	20	816		OLSEN JS	DO			0	993	993-	0.0
0T03000	INTGR MNT CMPLX	.14106	SF	77	20	2013		OLSEN JS	DO			0	2219	2219-	0.0
0T04000	ENRGY MON CNTRL	0		79	20	1236		OLSEN JS	DO			0	2402	2402-	0.0
0T06000	MUNITIONS MAINT	0		79	20			NO PE 97 REC	DO	DO		0	197	197-	0.0

DISTRICT EXCEPTION REPORT

U.S. ARMY ENGINEER DISTRICT[LOS ANGELES PROGRAM[MCAF REPORT DATE[31MAY78

TYPE OF OVERRUN[S + A FUNDS PAGE NUMBER[4

STATION[EDWARDS AFB CALIFORNIA

PROJECT NUMBER	PROJECT DESCRIPTION	SCOPE	UN IT	AU YR	TP FD	CONTRL COST -(000)	CONSTRUCTION CONTRACTOR	PROJECT ENGINEER	DELAY 1	DELAY 2	TOT DIR CON CST -(000)-	S+A % AUTH	S+A CST EST	COST OVERRUN	% OVER
0002000	ALTER A/M DORMS	512	MN	76	20	3236	J.R YOUNGDALE CO	OLSEN JS	FA		2474	5.00	120	4	0.1
0106090	FUEL WASTE TRMT	90	SF	72	20	1423	MAECON, INC.	OLSEN JS	DO		2629	5.00*	126	5	0.1

DISTRICT EXCEPTION REPORT

U.S. ARMY ENGINEER DISTRICT[LOS ANGELES PROGRAM[MCAF REPORT DATE[31MAY78

TYPE OF OVERRUN[CONSTRUCTION TIME PAGE NUMBER[4

STATION[EDWARDS AFB'CALIFORNIA

PROJECT NUMBER	PROJECT DESCRIPTION	SCOPE	UN IT	AU YR	TP ED	CONTRL COST -(000)	CONSTRUCTION CONTRACTOR	PROJECT ENGINEER	DELAY 1	DELAY 2	ORG SCH COMPLET	CUR SCH COMPLET	EXPECTD COMPLET	DAYS REMIND	% OVER
0003000	EMER ELEC PW PL	1	LS	76	20	618	CHAYNE CONST. CO.	OLSEN JS	CE		08JUL77	08JUL77	01JUL78.	10-	3.0

STATUS AS OF DATE 750613
THIS RUN DATE 06/17/75

AMPPS CONSTRUCTION PROJECTS
PROJECT CWE AND FUNDS CONTROL
BELL-CHELI CALIFORNIA

LOS ANGELES
PAGE 1

ADP WORKCODE	CATEG	LI NO.	DESCRIPTION	AUTHORIZED	EXPENDED	RESERVED	AVAILABLE
MC 3 005 3 001		001	ES CENTER	311,250.00	217,675.50	89,319.50	4,255.00

SUB FEAT	DESCRIPTION	EXP. BREAKOUT
82004	CONSTR CONT SUBJ S-A	207,310.00
82805 805	S-A ON 82004 - 82005	10,365.50
* * * * * * * * * *	EXPENDITURES TOTAL	217,675.50
	CWE DIRECT	207,310.00
	CWE INDIRECT	10,365.50
	ASSET VALUE	217,675.50

STATUS AS OF DATE 750613
THIS RUN DATE 06/17/75

AMPRS CONSTRUCTION PROJECTS
PROJECT CWE AND FUNDS CONTROL
DAVIS-MONTHAN AFB, ARIZONA

LOS ANGELES
PAGE 2

ADP WORKCODE	CATEG	LI NO.	DESCRIPTION	AUTHORIZED	EXPENDED	RESERVED	AVAILABLE
KA 4 001 4 001	214467	74001	REFUEL VEH MAIN	215,800.00	209,716.65		6,083.85

SUB FEAT		DESCRIPTION		EXP. BREAKOUT
80098	800.11	ENGR CONT O/D	**	12,532.95
80098	800.12	GOVT SUP ENGR CONT O/D	**	11,677.50
80099	800.2	DSGN BY GOVT FORCES O/D	**	124.93
82004		CONSTR CONT SUBJ S A		199,922.00
82805	805	S A ON CONT COSTS		9,794.15
**********		EXPENDITURES TOTAL		209,716.15
**********		NON-EXPENDIT. TOTAL	**	24,335.37
		CWE DIRECT		199,922.00
		CWE INDIRECT		9,794.15
		ASSET VALUE		234,051.52

KA 5001 5001	211-15E	75-001	ACFT COMP PR/FA	531,000.00	175,025.75	504,440.15	9,534.10

SUB FEAT		DESCRIPTION	EXP. BREAKOUT
82004		CONSTR CONT SUBJ S A	16,215.00
82805	805	S A ON CONT COSTS	810.75
**********		EXPENDITURES TOTAL	17,025.75
		CWE DIRECT	16,215.00
		CWE INDIRECT	810.75
		ASSET VALUE	17,025.75

KA 5001 5003	721211H	75-003	A/D INST AIRCON	273,300.00		268,107.00	5,193.00

STATUS AS OF DATE 750613
THIS RUN DATE 06/17/75

AMPRS CONSTRUCTION PROJECT
PROJECT CWE AND FUNDS CONTROL
DOUGLAS ARIZONA USAR CENTER

LOS ANGELES

ADP WORKCODE	CATEG	LI NO.	DESCRIPTION		AUTHORIZED	EXPENDED	RESERVED	AVAILABLE
WC 3 003 3 001			RES CTR AUDIT		291,816.00	288,181.38	500.00	3,134.62
SUB FEAT			DESCRIPTION		EXP. BREAKOUT			
80097	80011		AE DSGN CONT-OD	**	11,280.00			
80098	80012		GOVT SUP AE CONT-OD	**	6,487.15			
80099	8002		DSGN BY GOVT FORCES-OD	**	1,386.87			
82004			CONSTR CONT SUBJ S-A		274,318.00			
82005			GEM SYCS - EQUIP		1,177.84			
82805	805		S-A ON CONT		12,690.84			
• • • • • • • • • •			EXPENDITURES TOTAL		288,181.38			
• • • • • • • • • •			NON-EXPENDIT. TOTAL	**	19,154.02			
			CWE DIRECT		275,490.84			
			CWE INDIRECT		12,690.54			
			ASSET VALUE		307,335.40			
QR 4 160 4 001			EQUIP FOR CNTR		44,437.00	43,436.50		1,000.50
SUB FEAT			DESCRIPTION		EXP. BREAKOUT			
82004			CONST CONT SUBJ S-A		41,500.00			
82805	805		S-A ON CONT		1,936.50			
• • • • • • • • • •			EXPENDITURES TOTAL		43,436.50			
			CWE DIRECT		41,500.00			
			CWE INDIRECT		1,936.50			
			ASSET VALUE		43,436.50			

DISTRICT- LOS ANGELES

LOCATION- EDWARDS AFB CALIFORNIA

USING SERVICE

CONSTRUCTION STATUS REPORT

REPORT DATE- 31MAY78

PAGE NUMBER- 6

PROJECT DESCRIPTION	PROJECT NUMBER	PROG YR	APPROVED CWE	CONTRACT AMOUNT	NTP DATE	CONST EX COMP	AOD DATE	PCT SCH	PCT COMPL ACT	REMARKS
FUEL WASTE TRMT	0106000	72	2754994	2596359	15OCT73	30JUN76	30JUN76	**	**	FISCAL COMPLETION 31JAN78
*** PROG-YR SUB TOTAL			2754994	2596359						
ROCKET PROP LAB	0001000	74	819400	779415	19DEC74	30DEC75	30DEC75	**	**	FINAL PYMT 15NOV76-AWAITI NG COMPL OF SUB-LT
ALT TO APR FAC	0001001	74	59600	46749	10MAR77	30NOV77	30NOV77	**	**	FINAL EST NOT RECD IN DIS T OFC
*** PROG-YR SUB TOTAL			879000	826564						
ALTER A/M DORMS	0002000	76	2403102	2474446	05JUL76	15MAR78	15MAR78	**	**	FINAL EST NOT IN DIST OFC
EMER ELEC PW PL	0003000	76	654905	609550	07JUL76	01JUL78	01JUL78	**	98	GENERATOR RETURNED FOR RE PAIRS
*** PROG-YR SUB TOTAL			3058007	3083996						
ALT HEATING PLT	0005000	78	151112	141226	17FEB78	20AUG78	20AUG78	18	18	LATE DELV OF TANKS
*** PROG-YR SUB TOTAL			151112	141226						
****** LOCATION TOTAL			7043113	6650145						

DISTRICT - LOS ANGELES — CONSTRUCTION MANAGER REPORT — REPORT DATE - 31MAR79

LOCATION - FSPH / EDWARDS CAL — AREA/RESIDENT OFFICE - EDWARDS PRJ OFF — PAGE NUMBER - 112

PROJECT DATA

DESCRIPTION / CONTRACTOR	TF PROJ, AY / ADP CODE	CONTR NO / IFB NO	NTP ACK / EX COMP	PCT CMP	CONTRACT CURR EST	OTHER DIR EST	UN/AWD ESTIMATE	CNTGCY ESTIMATE	S+A ESTIMATE	E+D BEFORE	E+D AFTER	CWE FUNDS RCD
LIBRARY - SOLAR	20000300078	0978C0051	24JUL78	76	685054	0	4155	4925	34510	0	260	729906
CHAYNE CONST. CO.	A60238005	05/880087	20MAY79	70								730000

PERCENT DATA

YEAR	78					79												80												81						
MONTH	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07
SCH %	03	10	14	30	50	55	58	76	89	**																										
ACT %	03	11	15	27	37	48	58	70	00	00																										

MOD/ACT DATA

ACTV SH/NO	INCEPTN DATE	ORG AGY	STATUS DATE	STA TUS	MOD NUMBER	MOD TYP	MOD/SIG DATE	MODIFICATION/ACTIVITY DESCRIPTION	CHANGE AMOUNT	CHNG DAYS	MOD AGE
4A000	07JUL78		07JUL78	4			07JUL78	AWARD CWE $729,906			
CH001	20FEB79		20FEB79	5			20FEB79	EXPECTED COMPLETION - 20 MAY			
CG002	05MAR79		05MAR79	6			05MAR79	A-E SERVICES 2544 TO SPK 79-20		30	
CD003	22SEP78		03FEB79	6	P00002	T	20FEB79	FLOOR RECEPTACLE-RM 2	260		
CD004	11DEC78		11DEC78	6	P00001		11DEC78	CONCRETE BLOCK	307		
CD005	22NOV78		02MAR79	6	P00003	M	12MAR79	WATERPROOFING		30	
CD006	14DEC78		16MAR79	5		M	NO DATA	CARPET	3591		
									4155		107

MOD/ACT SUMMARY

MOD T/C 4 UNFUNDED NO	AMOUNT	DAYS	MOD T/C 5 PENDING NO	AMOUNT	DAYS	MOD T/C 6 FIRM NO	AMOUNT	DAYS	MOD T/C 2 INCOMPLETE NO	AMOUNT	DAYS
1		0	2	4155	30	4	4158	30	0	0	0

DISPLAY OPTIONS

021 REMARK CODE / REMARK TEXT / REMARK TITLE

REMARK CODE	REMARK TITLE
011	OCE MCC-23 REPORT CARD 6
012	OCE MCC-23 REPORT CARD 7

025 AMOUNT CODE

AMOUNT CODE	TOTAL DOLLARS	AMOUNT TITLE
C690	73573.00	WORK PLACEMENT ESTIMATE PRIOR YEARS
C691	251715.00	WORK PLACEMENT ESTIMATE BUDGET YEAR
C754	682156.00	AWARD CONTRACT AMOUNT
P006	68598.00	CONTRACTOR EARNINGS CURRENT MONTH
P011	320513.00	CONTRACTOR EARNINGS CURRENT FISCAL YEAR
P016	394286.00	CONTRACTOR EARNINGS CUMULATIVE TO DATE

029 DATE CODE

DATE CODE	ORIGINAL	CURRENT	EXPECTED	DATE TITLE
C906	790321	790420	790520	BENEFICIAL OCCUPANCY DATE
C912	790321	790420	790520	CONST CONTRACT COMPLETION DATE
C930	000240	000270	000300	CONST CONTRACT CALENDAR DAYS
C936	780725	780725	780725	CONSTRUCTION START DATE
C942	780724	780724	780724	CONST. CONTRACT N.T.P. ACKNOWLEDGEMENT DATE
C954	780630	780630	780630	CONSTRUCTION CONTRACT AWARD DATE

STATION_ EDWARDS CAL

BASE DATE_ 01OCT78

AMPRS WORK PLACEMENT ESTIMATES
PROJECT TOTALS SUMMARIZED BY STATION
AREA/RES OFF, EDWARDS PRJ OFF
AMOUNTS IN THOUSANDS

RUN DATE- 01APR79

DESCRIPTION PY PROJ NO, PCT	START DURAT,	TOTL WPE PR PLCMT	MO 01 OCT	MO 02 NOV	MO 03 DEC	MO 04 JAN	MO 05 FEB	MO 06 MAR	MO 07 APR	MO 08 MAY	MO 09 JUN	MO 10 JUL	MO 11 AUG	MO 12 SEP	SUM 12MO CARY OVR
ALT DROP RESRCH	01SEP79	2469,1													
78 0001000 00	0330														
2ND 12 MONTHS			50,1	145,9	230,1	295,5	337,0	351,5	337,0	295,5	230,1	145,9	50,1		2469,1
3RD 12 MONTHS															
FLT TEST CNTROL	04JUL78	6515,5	325,6	260,5	130,2	325,6	169,3	423,3	710,1	456,0	325,7	390,9	456,0	325,7	4299,6
78 0001000 12	0405	781,9													
2ND 12 MONTHS			390,9	420,2	291,3	195,4	130,3	65,1							1433,4
3RD 12 MONTHS															
ALTER REQ	17JUN78	3100,0	121,0	121,0	121,0	80,4	121,0	102,7	80,6	124,0	124,0	124,0	124,0	124,0	1467,9
78 0002000 14	0720	434,0													
2ND 12 MONTHS			155,0	124,0	124,0	124,0	124,0	155,0	124,0	124,0	124,0				1178,0
3RD 12 MONTHS															
LIBRARY - SOLAR	23JUL78	690,0	27,4	82,3	98,6	75,4	68,6	85,0	128,3	75,9					
78 0003000 11	0300	75,9													611,8
2ND 12 MONTHS															
3RD 12 MONTHS															
ALT HEAT SYSTM	23JUL78	444,5	48,8	71,1	71,1	48,8	53,3	22,2	4,4	4,4					
78 0004000 27	0270	120,0													324,5
2ND 12 MONTHS															
3RD 12 MONTHS															
INTGN MNT CMPLX	30AUG78	2201,9	349,2	261,9	414,7	305,6	246,6	191,5	110,0	66,0					
78 0301000 11	0245	242,2													1945,9
2ND 12 MONTHS															
3RD 12 MONTHS															
MONDSS/INSP SHP	12MAR79	1245,2							29,2	73,5	116,0	149,0	169,9	177,3	711,2
79 0001000 00	0330														
2ND 12 MONTHS			169,9	149,0	116,0	73,5	29,2								533,9
3RD 12 MONTHS															
ENRGY MON CNTRL	01JUL79	2612,5											44,4	130,6	175,0
79 0704000 00	0365														
2ND 12 MONTHS			207,4	270,9	315,0	309,0	336,0	315,0	270,6	207,4	130,6	44,4			2437,5
3RD 12 MONTHS															
IN FAC AVIONICS	01APR80	9200,0													
81 0701000 00	0300														
2ND 12 MONTHS															9200,0
3RD 12 MONTHS			1421,4	1282,4	1017,5	553,2	225,4			225,4	653,2	1017,5	1282,4	1421,4	4000,0

STATION_ EDWARDS CAL

BASE DATE_ 01OCT78

AMPHS WORK PLACEMENT ESTIMATES
PROJECT TOTALS SUMMARIZED BY STATION
AREA/RES OFF, EDWARDS PRJ OFF
AMOUNTS IN THOUSANDS

RUN DATE= 01APR79

STATION TOTAL EDWARDS CAL	TOTL MPE	MO 01 OCT	MO 02 NOV	MO 03 DEC	MO 04 JAN	MO 05 FEB	MO 06 MAR	MO 07 APR	MO 08 MAY	MO 09 JUN	MO 10 JUL	MO 11 AUG	MO 12 SEP	SUM 12MO
BASE DATE + 12	28478.5	902.3	827.0	832.3	910.0	889.0	824.9	1058.9	800.1	565.8	604.0	794.5	757.7	9535.9
2ND 12 MONTHS		973.4	1109.9	1010.3	1020.7	954.7	806.8	731.7	852.4	1137.9	1207.9	1332.6	1421.4	12651.8
3RD 12 MONTHS		1421.4	1202.5	1017.3	959.2	223.4								4600.0

BASE DATE- 01OCT79

AMPRS WORK PLACEMENT ESTIMATES
RES. OFFICE TOTALS SUMMARIZED BY DISTRICT
AMOUNTS IN THOUSANDS

RESIDENT OFFICE	MO 01 OCT	MO 02 NOV	MO 03 DEC	MO 04 JAN	MO 05 FEB	MO 06 MAR	MO 07 APR	MO 08 MAY	MO 09 JUN	MO 10 JUL	MO 11 AUG	MO 12 SEP	SUM 12MO
NO A-R 97 REC.													
BASE DATE + 12	321.6	124.9	163.8	69.1	91.4	24.7	388.2	20.1	20.1	20.1	20.1		1200.2
2ND 12 MONTHS													
3RD 12 MONTHS													
PRIOR PLACEMENT	4252.6												
EDWARDS PRJ OFF													
BASE DATE + 12	902.3	902.1	909.4	816.0	693.6	924.9	1058.9	800.1	565.8	664.0	794.5	757.7	9689.4
2ND 12 MONTHS	773.4	1109.9	1016.5	1020.7	954.7	966.8	731.7	852.4	1137.9	1207.9	1332.6	1421.4	12651.8
3RD 12 MONTHS	1421.4	1282.5	1017.5	653.2	225.4								4000.0
PRIOR PLACEMENT	1054.0												
GEORGE PRJ OFF													
BASE DATE + 12	186.6	385.6	201.5	122.4	339.9	219.1	236.4	111.0	201.4	159.5	196.8	266.4	2544.6
2ND 12 MONTHS	335.4	293.9	418.7	400.0	400.0	512.4	612.9	685.6	724.6	740.9	768.3	815.4	6708.0
3RD 12 MONTHS	638.9	851.3	850.3	837.0	859.9	900.7	873.2	877.4	871.5	859.2	837.4	806.8	10203.4
PRIOR PLACEMENT	643.4												
TUCSON PROJECT													
BASE DATE + 12									16.9	48.5	74.3		230.7
2ND 12 MONTHS	96.9	91.1	119.7	179.0	216.9	295.5	261.1	245.5	200.0	130.5	45.4	91.1	1831.6
3RD 12 MONTHS													
PRIOR PLACEMENT													
WEST LOS ANGELE													
BASE DATE + 12	.4	8.2											
2ND 12 MONTHS													8.5
3RD 12 MONTHS													
PRIOR PLACEMENT	845.4												
NORTH COAST PRJ													
BASE DATE + 12	10.0	114.3	79.0	364.3	456.0	699.2	1308.7	416.8	141.4	330.2	395.2	174.8	4490.5
2ND 12 MONTHS													
3RD 12 MONTHS													
PRIOR PLACEMENT	1185.6												

BASE DATE_ 010CT78

ARMS WORK PLACEMENT ESTIMATES
RES. OFFICE TOTALS SUMMARIZED BY DISTRICT
AMOUNTS IN THOUSANDS

RUN DATE= 01APR79

RESIDENT OFFICE	MO 01 OCT	MO 02 NOV	MO 03 DEC	MO 04 JAN	MO 05 FEB	MO 06 MAR	MO 07 APR	MO 08 MAY	MO 09 JUN	MO 10 JUL	MO 11 AUG	MO 12 SEP	SUM 12MO
TUNOPA RES OFC													
BASE DATE + 12													
2ND 12 MONTHS	347.2	373.7	387.5	389.3	378.6	325.0	32.0	95.0	154.7	210.2	262.2	309.7	1063.7
3RD 12 MONTHS							319.8	274.1	219.7	157.9	95.0	32.0	3330.3
PRIOR PLACEMENT													
STS RES OFC													
BASE DATE + 12													
2ND 12 MONTHS		557.2	1660.5	2720.5	4175.1	5934.6	7916.6	9301.5	12304.5	15609.0	18134.7	19795.2	97769.5
3RD 12 MONTHS	20355.5	20708.4	20239.7	18922.2	17209.6	15212.5	12080.1	9743.2	7204.6	5168.5	2967.2	1579.3	152191.1
PRIOR PLACEMENT													
DISTRICT TOTALS													
BASE DATE + 12	6370.2	8645.0	7093.5	5329.3	5020.1	6787.1	9836.7	7495.2	7209.5	9310.5	10043.2	10370.7	93905.5
2ND 12 MONTHS	10796.2	10244.0	10600.4	11177.9	11943.7	13895.3	15760.3	17992.2	21431.5	24796.1	27277.9	28470.2	204486.8
3RD 12 MONTHS	20457.8	27523.2	25810.2	25138.5	20572.6	18539.7	16123.2	13244.6	10626.5	8464.5	6073.5	4347.5	202940.7

BASE DATE_ 010CT79

AMPRS WORK PLACEMENT ESTIMATES
TYPE FUND TOTALS SUMMARIZED BY
AREA RESIDENT OFFICE AND DISTRICT
AMOUNTS IN THOUSANDS

RESIDENT OFFICE	MO 01 OCT	MO 02 NOV	MO 03 DEC	MO 04 JAN	MO 05 FEB	MO 06 MAR	MO 07 APR	MO 08 MAY	MO 09 JUN	MO 10 JUL	MO 11 AUG	MO 12 SEP	SUM 12MO
2ND 12 MONTHS													
3RD 12 MONTHS													
TOTALS FOR MARCH PROJ OFF													
BASE DATE + 12			35,9	18,0	91,9	84,8	121,1	103,0	78,7	84,8	36,3		604,6
2ND 12 MONTHS													
3RD 12 MONTHS													
TONOPA RES OFC													
[MCAF]													
BASE DATE + 12													
2ND 12 MONTHS	347,2	373,7	387,9	389,3	378,6	325,0	32,0 319,8	95,0 274,1	154,7 219,7	210,2 157,9	262,2 95,0	309,7 32,0	1063,7 3330,3
3RD 12 MONTHS													
TOTALS FOR TONOPA RES OFC													
BASE DATE + 12													
2ND 12 MONTHS	347,2	373,7	387,9	389,3	378,6	325,0	32,0 319,8	95,0 274,1	154,7 219,7	210,2 157,9	262,2 95,0	309,7 32,0	1063,7 3330,3
3RD 12 MONTHS													
STS RES OFC													
[MCAF]													
BASE DATE + 12													
2ND 12 MONTHS		557,2	1660,5	2720,3	4175,1	5934,6	7516,6	9361,5	12304,5	15609,0	18134,7	19795,2	97769,3
3RD 12 MONTHS	20355,5	20708,4	20239,7	18922,2	17209,6	15212,5	12680,1	9743,2	7204,6	5168,5	2967,2	1579,3	152191,1
TOTALS FOR STS RE OFC													
BASE DATE + 12													
2ND 12 MONTHS		557,2	1660,5	2720,3	4175,1	5934,6	7516,6	9361,5	12304,5	15609,0	18134,7	19795,2	97769,3
3RD 12 MONTHS	20355,5	20708,4	20239,7	18922,2	17209,6	15212,5	12680,1	9743,2	7204,6	5168,5	2967,2	1579,3	152191,1
UNIFORM RATE													
BASE DATE + 12	2521,4	3919,2	3099,7	2957,5	2905,5	4094,2	5762,2	5522,4	5035,1	5993,3	6004,1	6067,7	53882,7
2ND 12 MONTHS	6908,9	6223,6	6915,3	7914,0	9321,1	12032,7	14411,9	16619,1	19661,9	22659,2	24907,3	25969,1	173274,2
3RD 12 MONTHS	25736,4	25140,8	23712,9	21419,4	19310,0	17513,6	15152,6	12393,5	9837,9	7800,5	5552,9	3991,7	187722,2
NON UNIF. RATE													
BASE DATE + 12	4048,4	4925,8	3994,2	2365,9	2114,7	2692,9	4074,5	1972,8	2174,4	3317,2	4039,2	4303,0	40022,9
2ND 12 MONTHS	4287,3	4020,4	3685,2	3284,0	2972,6	1993,6	1548,4	1373,1	1769,6	2130,9	2570,6	2501,2	31612,6
3RD 12 MONTHS	2521,4	2382,4	2097,5	1719,2	1282,6	1025,1	970,6	891,1	788,6	664,0	520,5	355,8	15210,5
DISTRICT TOTALS													
BASE DATE + 12	6570,2	8845,0	7093,8	5323,3	5020,1	6787,1	9836,7	7495,2	7209,5	9310,5	10043,2	10370,7	93905,5
2ND 12 MONTHS	10996,2	10244,0	10600,4	11177,7	11943,7	13995,3	15760,3	17992,2	21431,5	24790,1	27277,9	28470,2	204480,0
3RD 12 MONTHS	28257,8	27523,2	25810,2	23138,5	20592,6	18598,7	16123,2	13244,6	10626,5	8464,5	6073,5	4347,5	202940,7

STRICT - LOS ANGELES — AMPHS CONSTRUCTION PROGRESS REPORT — REPORT DATE - 31MAR79

ATION - EDWARDS CAL — 7 CARD FORMAT OF DAEN-MCC-23 DATA — PAGE NUMBER - 51

EP REG	STAT CODE	TYPE FUND	PROJECT NO	SUB	AUTH YEAR	U C	** *
40 FSPH		20	0003	000	78	C	

DES AGENT	CONST AGENT	USING SERVICE	PROG YEAR	PROJECT DESCRIPTION	SCOPE	UNIT MEAS	CONTROL COST	PKG PROJ	CATEGORY NO	CATEGORY SUB	TYPE CONS	CORPS S-A	
DYR	DYQ	H1	78	LIBRARY - SOLAR	007752	SF	000730		740	765	P		1

• • • COSTS CHARGED TO ENGR - DES FUNDS (000) • • •

• • • A/E COSTS • • • PRIOR	AFTER	SUP/DEL	• • • D/E COSTS • • • PRIOR	AFTER	SUP/DEL	OTHER DIRECT	• • • • • • • DESIGN DATES • • • • • • • DESIGN START	CONCEPT COMPLETE	SCHEDULE COMPLETE	EXPECTED COMPLETE	CONSTR CONTR AWARD	
0069	0000	0060	0047	0000	0000	0000	75/12/11	76/04/09	77/05/21	77/05/21	78/06/30	2

• • • • • COSTS CHARGED TO CONSTRUCTION FUNDS (000) • • • • •

• • • DIRECT • • • CONTR	OTHER	•UNDISTRIBUTED• UNAMD	CONTGCY	S-A COST	•ENGR-DESIGN• PRIOR	AFTER	• • • CONSTRUCTION DATES • • • OCCUPANCY	SCHEDULE COMPLETE	EXPECTED COMPLETE	AUTH LAW NO	
000686	00/000	000004	.0005	0035	0000	0000	79/05/20	79/04/20	79/05/20		3

CWE BASIS CODE	CURRENT WORKING ESTIMATE	• • DESIGN• • RECD	IN-PLACE	• CONSTRUCTION• • RECD	IN-PLACE	DU 813 CODE	STAT CODE	PRI DELAY CODE	SEC DELAY CODE	• DESIGN PHASE• SCH PCT	ACT PCT	DAYS AHEAD	• CONSTR PHASE• SCH PCT	ACT PCT	DAYS AHEAD	
F	729,906	0116	0086	000730	000414	2	V	CE		**	**	+000	76	70	-018	4

• WORK PLACEMENT ESTIMATE • • PRIOR YEARS	BUDGET YEAR	SUBSEQUENT YEARS	S-A RATE CODE	• • • • REVISED CONTROL FIELDS • • • • REP ORG	STAT CODE	TYPE FUND	PROJECT NO	SUB	AUTH YEAR	DESIGN CONTRACT NUMBER	CONSTRUCTION CONTRACT NUMBER	
00474	000252	000000	F							05 76 C 0049	09 78 C 0051	5

FES AND NARRATIVES ----------

FES AND NARRATIVES ----------

ERD MTH DUNT	CONTRACT CALENDAR DAYS-EXP	CONTRACT CALENDAR DAYS-ORG	CONSTR GOV. TOTAL ESTIMATE	CONSTR BIDS RECVD	CWE AWARDED	DESIGN BY	SMALL BUS. CODE	A/E SELECTION DATE-SCH	A/E SELECTION DATE-ACT	DESIGN PHASE CODE	
000652	0300	0240	0000651	008	1,308,999		1	/ /	/ /		6

NTRACT D DATE PECTED	BID OPEN DATE EXPECTED	DESIGN DI-TCV DATE	
/ /	/ /	/ /	9

SELECTED BIBLIOGRAPHY

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AD-A077 675 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL--ETC F/G 5/1
SPACE TRANSPORTATION SYSTEM WESTERN LAUNCH SITE CONSTRUCTION--ETC(U)
SEP 79 G S GRIFFIN, J M MARDIS

UNCLASSIFIED AFIT-LSSR-4-79B N/L

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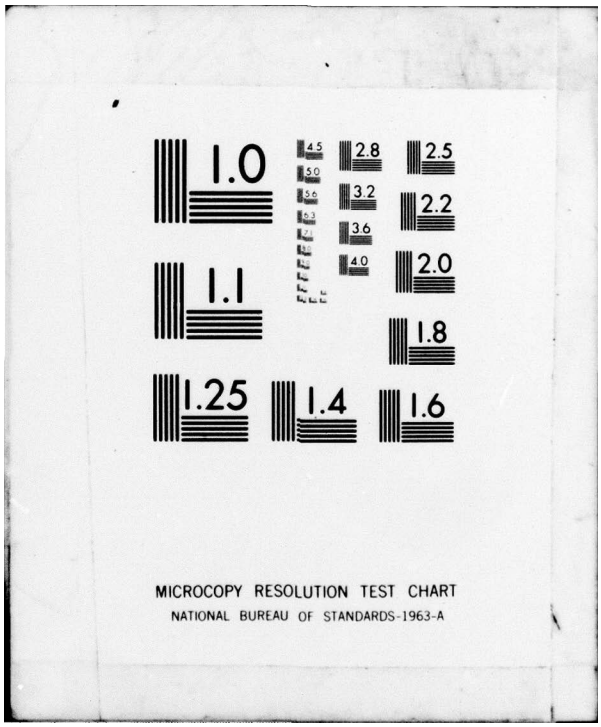
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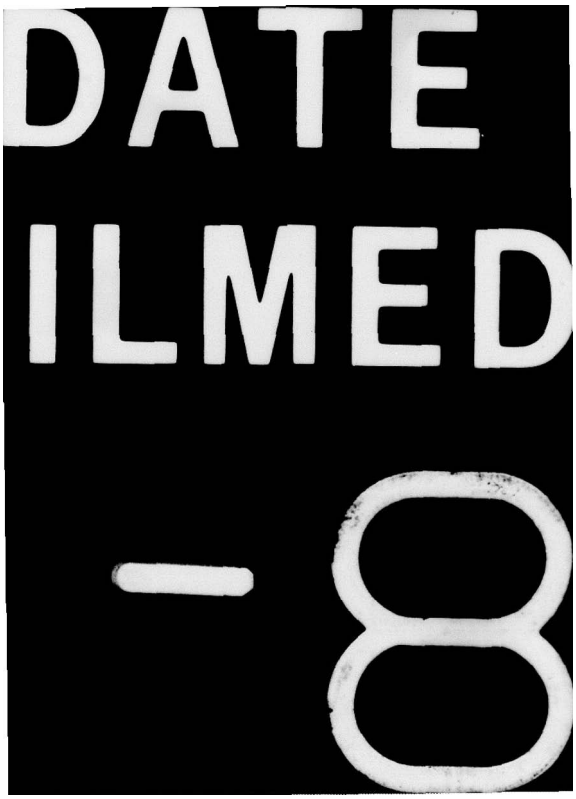
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